

End-to-end solution
to monitor and govern
your data estate

Admin portal

Tenant settings

- Number of User Dashboards: 16 (Count of DashboardId)
- Number of User Reports: 91 (Count of Id)
- Number of User Datasets: 75 (Count of Id)

Users

Premium Per User

Audit logs

Capacity settings

Refresh summary

Embed Codes

Organizational visuals

Azure connections

Workspaces

Custom branding

Protection metrics

Featured content

Most Consumed Dashboards by Users

Dashboard	Count
Crap File.pbix	6
Data Estate Monitor.pbix	6
DIAD Final Report with R...	4
DIAD Final Report with R...	4
Daves board - 251327	3
Car Analysis Report.pbix	2
Demo_Parameter.pbix - 2...	2
Human Resources Sample...	2
IT Spend Analysis Sample...	2
Second Model.pbix - 570...	2
Demo_Parameter.pbix - 2...	1
Customer Profitability Sa...	1
DIAD Final Report.pbix - ...	1
Human Resources Sample...	1

Most Consumed Packages by Users

Package	Count
(Blank)	16
bpaa output.pbix	10
Crap File.pbix	9
Test with partitions...	8
Perfect E2E.pbix	7
Final Report ...	6
Slowly chan...	5
DIAD Final R...	4
Sales mode...	4
Composite...	3
Dataflow...	3
Demo_Par...	3
DIAD Fin...	3
Model Tele...	3
DIAD Fin...	3
SQL Bits	2
First report	2
App A...	2
LSQL	2
Auto g...	2
Premium C...	2
Human R...	2
Custo...	1
Tran...	1
Power BI In...	1

Top Users with Most Dashboards

GivenName	FamilyName	Count of DashboardId
Demo	User	12
Marc	Lelijveld	4
PBI_DeploymentPipeline	Jankaitiene	3
Odetta		3
PbiRefresh		2
Dave	Ruijter	2
Dave Ruijter		2
Kirsten	de Koning	1
Power BI Monitor Extension		1

Runs

ActivityRuns

Total

Top Users with Most Reports

GivenName	FamilyName	Count of Id
Demo	User	79
Marc	Lelijveld	37
PBI_DeploymentPipeline		23
Odetta		10
Dave Ruijter	Ruijter	10
PbiRefresh		10
Dave	Jankaitiene	9
Jeroen	ter Heerdt	6
SynapseAccess		5
Kirsten	de Koning	3
Power BI Monitor Extension		1

Integration Runtime CPU

Request content

```
238165
select [StockItemKey] as [Stock Item Key], [WMSStockItemID] as [WMS Stock Item ID], [StockItem] as [Stock Item], [Color] as [Color], [SellingPackage] as [Selling Package], [BuyingPackage] as [Buying Package], [Brand] as [Brand], [Size] as [Size], [LeadTimeDays] as [Lead Time Days], [QuantityPerOuter] as [Quantity Per Outer], [IsChillerStock] as [Is Chiller Stock], [Barcode] as [Barcode], [TaxRate] as [Tax Rate], [UnitPrice] as [Unit Price], [RecommendedRetailPrice] as [Recommended Retail Price], [TypicalWeightPerUnit] as [Typical Weight Per Unit], [Photo] as [Photo], [ValidFrom] as [Valid From], [ValidTo] as [Valid To], [LineageKey] as [Lineage Key]
from [sales_model].[StockItem] as [StockItem]
```



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Agenda

- Intro into the monitoring solution
- Azure Purview
- Azure Log Analytics integration for Azure data services & Power BI

- Power BI monitoring with audit logs + tenant meta data (scanner API)
- Power BI Best practice analyzer on tenant level
- Sharing/managing the monitoring report in your organization

- Data quality monitoring – great expectations
- Cost management / resource utilization

- Data lake inventory report
- Platform governance meta data (tags, locks, rbac, etc)

Data estate

What is in scope?

Why do we want to monitor it?



Kahoot

Join at www.kahoot.it
or with the Kahoot! app

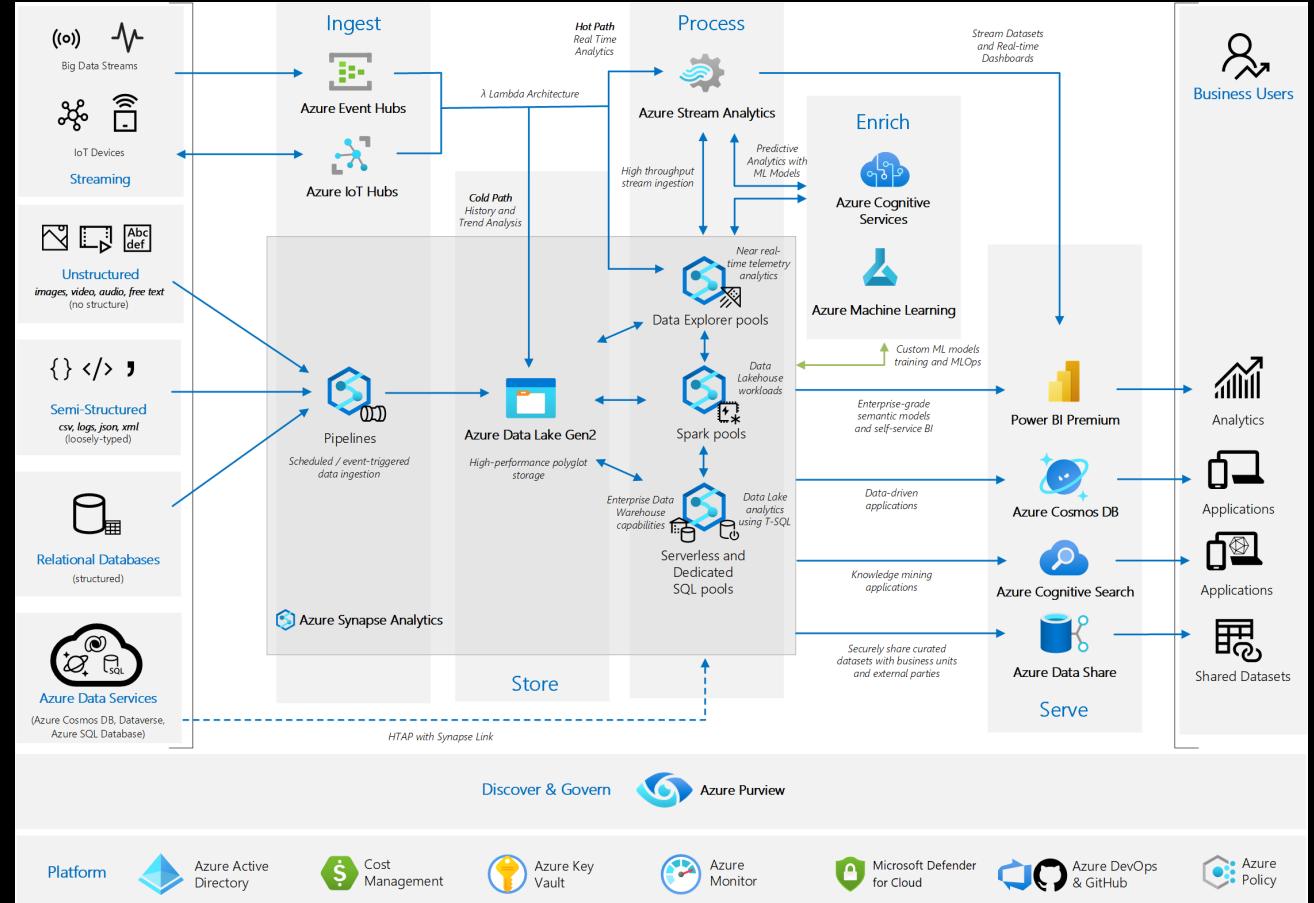
Game PIN:

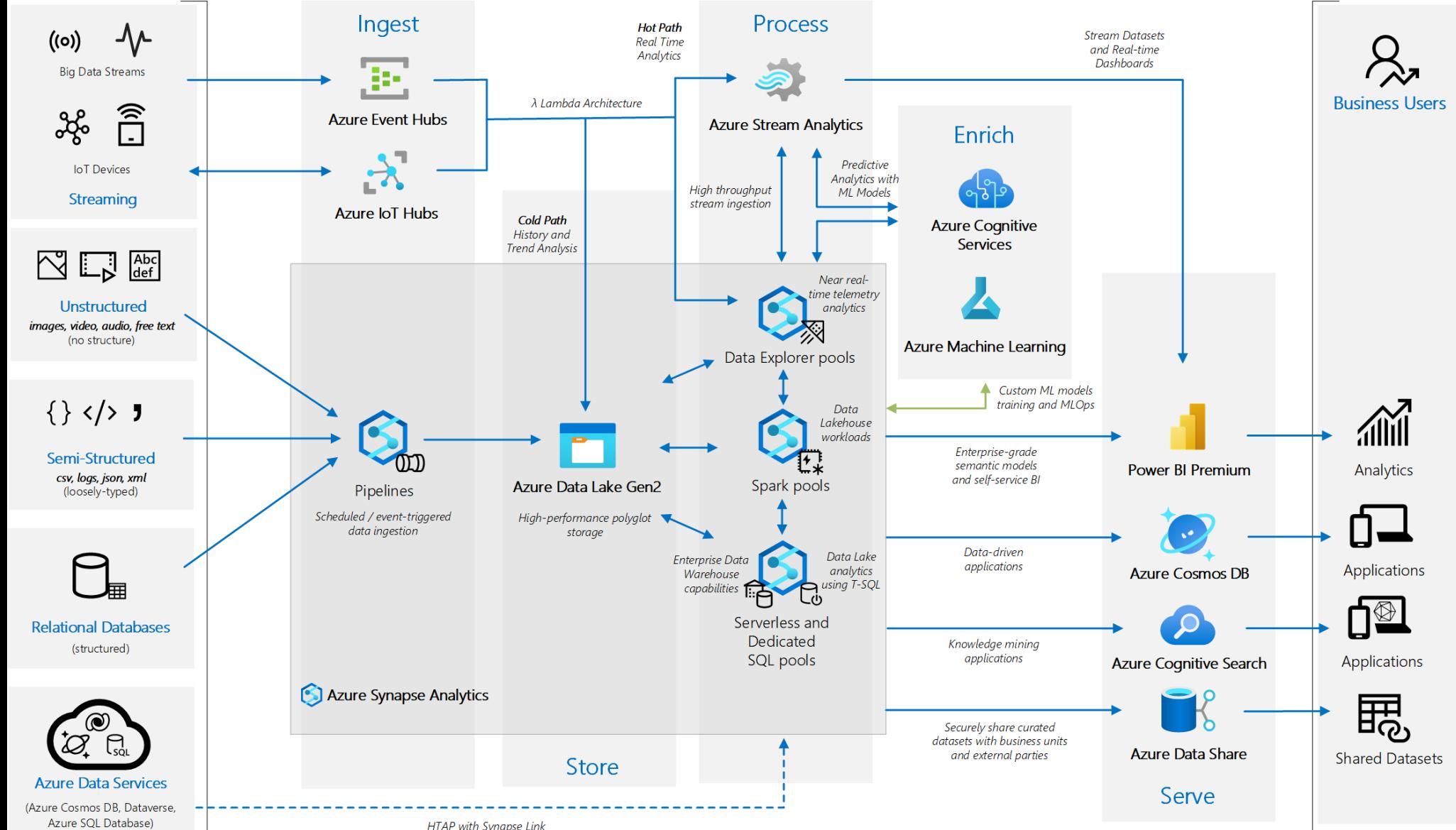
459 1815



Data estate

All the way from source to ingest, transform and serve to (visually) present data to the end user.





Platform



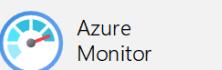
Azure Active
Directory



Cost
Management



Azure Key
Vault



Azure Monitor



Microsoft Defender
for Cloud



Azure DevOps
& GitHub



Azure Policy

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Business Users



Why?

- Your end-to-end data estate is scattered over different resources
- Each of these resources has its own specifics
- Cost driver vs performance vs scalability

The chain is only as strong as its weakest link

Demo

Data Estate Monitor



Concepts we will use throughout the day

- Azure Monitor
- Azure Log Analytics (ALA)
- Kusto Query Language (KQL)
- Azure Data Lake Storage (ADLS)
- Power BI (PBI)
- Azure Logic Apps

Overview of Purview

What does standard services like
Microsoft Purview offer?

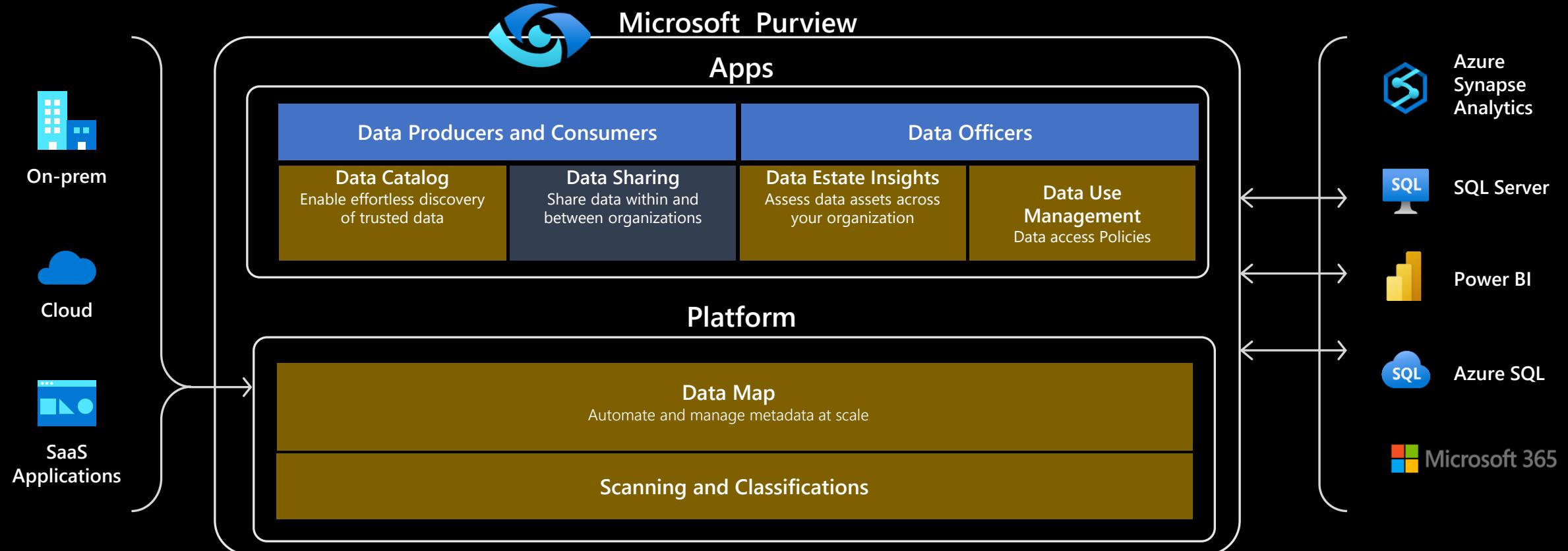


Generally Available

Preview

Microsoft Purview

Unified Data Governance



How does Purview scan your environment?

Example Power BI

Set of 4 APIs to get all Admin Insights

- GET Modified Workspaces To list all workspaces with changes
- POST Workspace Info To start a scan
- GET Scan Status To start polling till scan is ready
- GET Scan Results To get the results of the scan

HTTP

Copy

Try It

```
GET https://api.powerbi.com/v1.0/myorg/admin/workspaces/modified
```

Supported capabilities

- | | | |
|--|---|--|
| <ul style="list-style-type: none">✓ • Metadata Extraction✓ • Full Scan✓ • Incremental Scan✓ • Lineage✗ • Scoped Scan✗ • Classification✗ • Access Policy✗ • Data Sharing |  | <ul style="list-style-type: none">• Workspaces• Dashboards• Reports• Datasets including the tables and columns• Dataflows• Datamart |
|--|---|--|

Purview

Pros

- Out of the box solution
- Configuration instead of coding/building

Cons

- Lack of customization
- Incomplete (mainly focusses on cataloguing and not on usage)

Demo

Microsoft Purview



Is this what
we were
looking for?

Or should we build something
ourselves from scratch?



Logging

out of the box
vs
custom

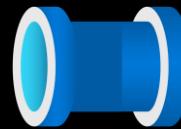


Out-of-the-box

Resource diagnostics
can be sent to ALA

Storage account inventory
can be sent to ADLS

Power BI events from the
Analysis Services engine
can be sent to ALA



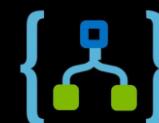
Pipelines (Synapse Analytics / ADF)



Azure Databricks



Storage / ADLS



Logic Apps / Functions / runbooks



Key Vault / vnets / etc.

DIY (do it yourself)

- For logs in ALA:
 - Analysis/monitoring
- For ADLS inventory report:
 - Analysis/monitoring
- Custom/Solution logs from your notebooks/scripts/functions
 - Long-term storage
 - Analysis/monitoring
- Power BI audit log:
 - Long-term storage
 - Analysis/monitoring
- Spark logs:
 - Long-term storage
 - Analysis/monitoring
- Azure Costs

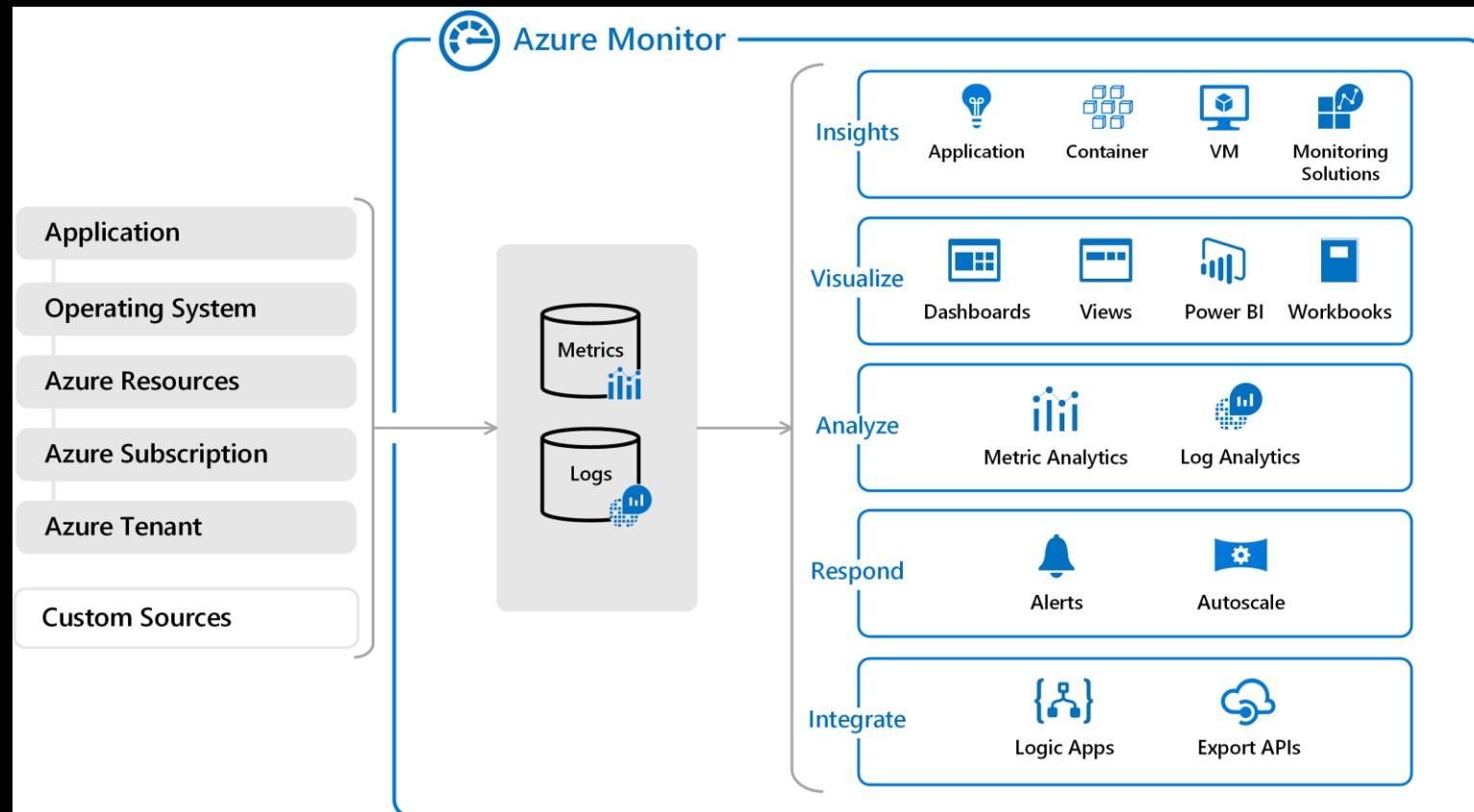
ALA integration for Data Services

Get insights from the resource
diagnostics



Log Analytics Workspace / Azure Monitor

Azure Monitor delivers a comprehensive solution for collecting, analyzing, and acting on telemetry from your cloud and on-premises environments. It helps you understand how your applications are performing and proactively identifies issues affecting them and the resources they depend on.



Azure Monitor workbooks

[Microsoft Azure](#)

Home > Monitor

Monitor | Workbooks | Demo workbook

Search resources, services, and docs (G+)

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Create a resource

Home

Dashboard

All services

FAVORITES

- Azure Active Directory
- Subscriptions
- Resource groups
- All resources
- Azure Synapse Analytics
- App Services
- Function App
- SQL databases
- Azure Cosmos DB
- Virtual machines
- Load balancers
- Storage accounts
- Virtual networks
- Monitor
- Advisor
- Microsoft Defender for Cloud
- Cost Management + Billing
- Help + support

Workbooks

Overview

Activity log

Alerts

Metrics

Logs

Change Analysis

Service health

Workbooks

Insights

- Applications
- Virtual Machines
- Storage accounts
- Containers
- Networks
- SQL (preview)
- Azure Cosmos DB
- Key Vaults
- Azure Cache for Redis
- Azure Data Explorer Clusters
- Log Analytics workspaces
- Azure Stack HCI (preview)
- Service Bus (preview)
- ... Insights Hub

Managed Services

- Managed Prometheus
- Azure Managed Grafana
- Azure Monitor SCOM managed

Workbooks

Edit

Auto refresh: Off

TenantId	SourceSystem	TimeGenerated	ResourceId	OperationName	Category	CorrelationId
0ef5f00d-d3da-45ed-a59d-9c7ab4c6634d	Azure	3/1/2023, 5:31:14 AM	ADF-WE-SQLBITS-PROD	Copy from REST connector into ADLS Gen2 - Succeeded	PipelineRuns	7894bb9a-1
0ef5f00d-d3da-45ed-a59d-9c7ab4c6634d	Azure	3/1/2023, 5:31:00 AM	ADF-WE-SQLBITS-PROD	Copy from REST connector into ADLS Gen2 - Queued	PipelineRuns	7894bb9a-1
0ef5f00d-d3da-45ed-a59d-9c7ab4c6634d	Azure	3/1/2023, 5:31:01 AM	ADF-WE-SQLBITS-PROD	Copy from REST connector into ADLS Gen2 - InProgress	PipelineRuns	7894bb9a-1
0ef5f00d-d3da-45ed-a59d-9c7ab4c6634d	Azure	3/1/2023, 11:31:00 AM	ADF-WE-SQLBITS-PROD	Copy from REST connector into ADLS Gen2 - Queued	PipelineRuns	ad70274b-1
0ef5f00d-d3da-45ed-a59d-9c7ab4c6634d	Azure	3/1/2023, 11:31:13 AM	ADF-WE-SQLBITS-PROD	Copy from REST connector into ADLS Gen2 - Succeeded	PipelineRuns	ad70274b-1

200
180
160
140
120
100
80
60
40
20
0

Feb 5 Feb 12 Feb 19 Feb 26 UTC+01:00

Runs Cancelled (Sum) app-we-pbmonitor-sc... 0

Runs Cancelled (Sum) app-we-pbmonitor-pb... 11

Runs Cancelled (Sum) app-we-pbmonitor-or... 0

Runs Completed (Sum) app-we-pbmonitor-ge... 37

Runs Completed (Sum) app-we-pbmonitor-pb... 744

Runs Completed (Sum) app-we-pbmonitor-or... 33

Runs Completed (Sum) app-we-pbmonitor-ge... 0

Runs Failed (Sum) app-we-pbmonitor-sc... 2

Runs Failed (Sum) app-we-pbmonitor-pb... 170

Runs Failed (Sum) app-we-pbmonitor-or... 3

Runs Failed (Sum) app-we-pbmonitor-ge... 0

1.1
1
0.9
0.8
0.7
0.6
0.5

Scenarios

- Pipelines:
 - Identify (unusual) long durations
 - Identify unusual amount of runs
 - Trend analysis for durations
- Spark cluster:
 - Analyse utilization of driver and worker nodes
- SQL Serverless:
 - Data scanned by DirectQuery & import to datasets
- Storage:
 - Analyse trend in amount of data stored
 - Analyse trend in amount/duration of reads and writes
- Cost:
 - Analyse Resource Costs

Demo

ALA integration for Azure Resources



Azure Docs

[Getting started with Azure Monitor - Azure Monitor | Microsoft Learn](#)

Article	Description
Plan your implementation	Things that you should consider before starting your implementation. Includes design decisions and information about your organization and requirements that you should gather.
Configure data collection	Tasks required to collect monitoring data from your Azure and hybrid applications and resources.
Analysis and visualizations	Get to know the standard features and additional visualizations that you can create to analyze collected monitoring data.
Configure alerts and automated responses	Configure notifications and processes that are automatically triggered when an alert is fired.
Optimize costs	Reduce your cloud monitoring costs by implementing and managing Azure Monitor in the most cost-effective manner.

Cost info

REGION:
West Europe

Log Analytics €105.53

ⓘ Daily log data ingested will depend on what you are monitoring with Log Analytics. [Learn more](#) about estimating data volumes.

Data Ingestion

1	×	30	×	€2.68	=	€67.05
DAILY LOGS INGESTED (GB/DAY)		Days		Per GB		

ⓘ This estimate is calculated using the most optimal pricing tier for the data ingestion. This calculation uses **Pay-As-You-Go tier**. [Learn more](#) about the pricing tiers

Data Retention

ⓘ The first month of retention is free

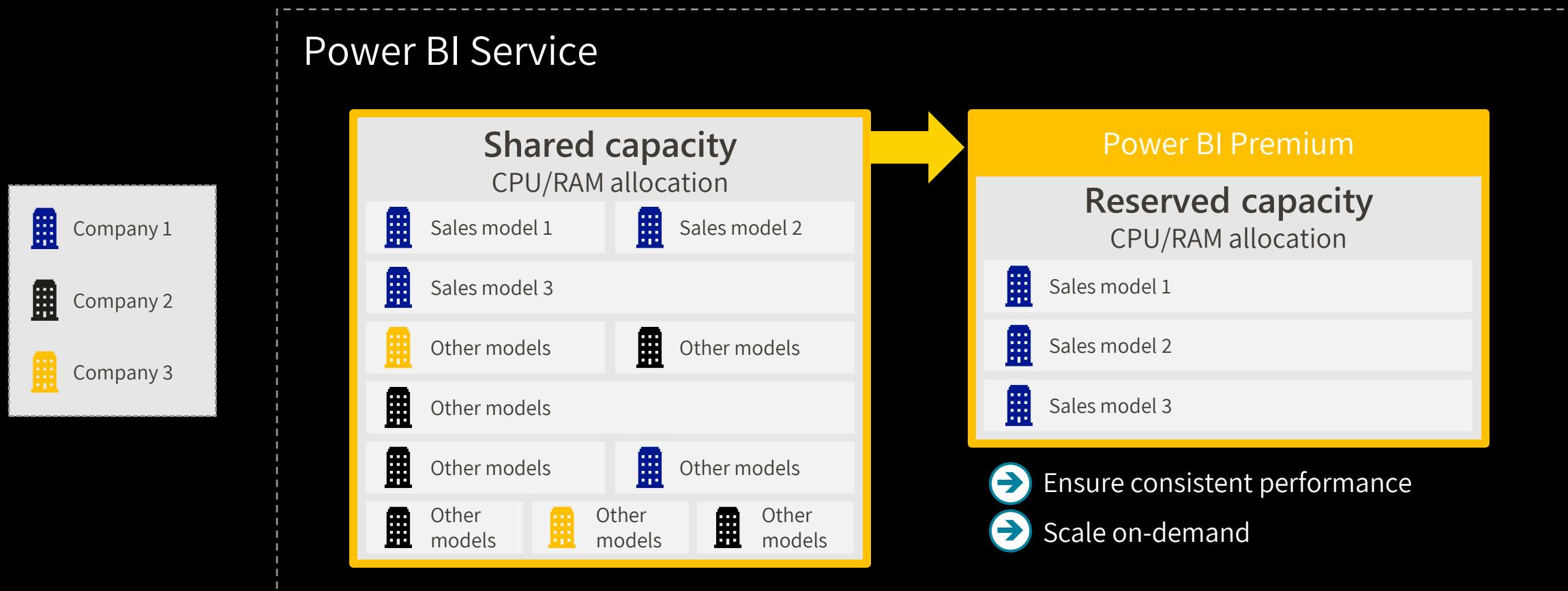
12						→
TOTAL RETENTION (MONTHS)						
30	×	11	×	€0.12	=	€38.48
Total monthly ingestion (GB)		Additional retention (months)		Per GB/month		

Power BI Log Analytics Integration

Get more insights out



Power BI Premium



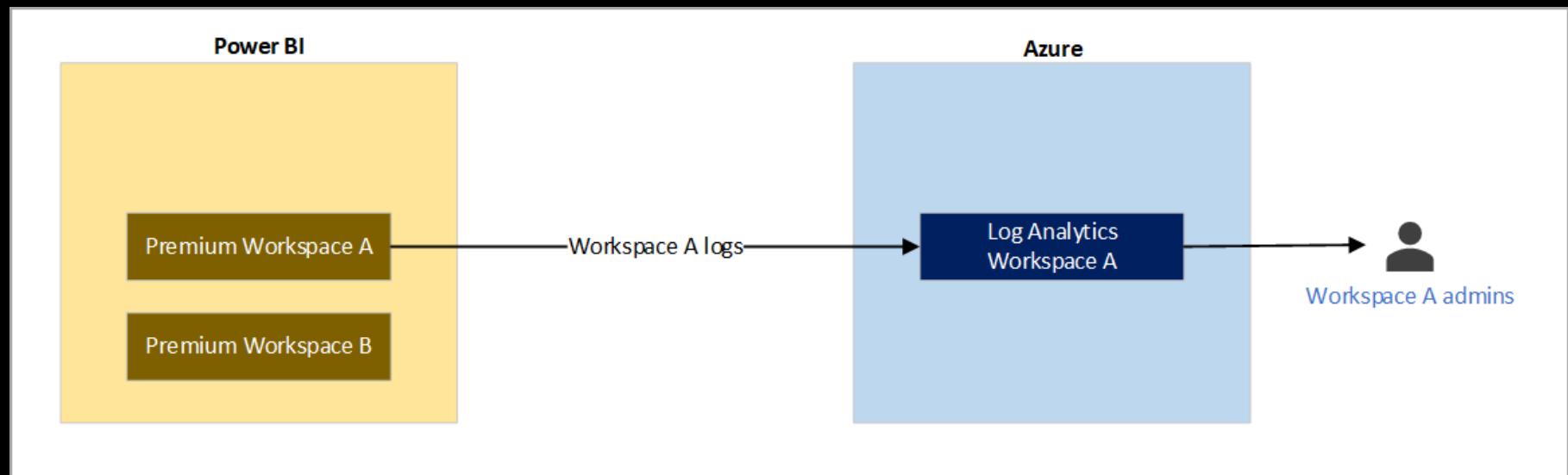
- ➡ Ensure consistent performance
- ➡ Scale on-demand

Premium specific features

- Paginated Reports
- Share with free users
(P sku only! Not in A sku!)
- Auto-scale
- Support for larger dataset sizes
- 48x daily refresh
(and Automatic Page Refresh)
- Extra dataflows features
- Enhanced embedding scenarios
- Bring your own key (BYOK)
- Hybrid tables
- Multi-geo support
- XMLA endpoints
- ~~Paginated Reports~~
- Deployment Pipelines (extra slide on this)
- AI workloads

Power BI Azure Log Analytics (ALA) integration

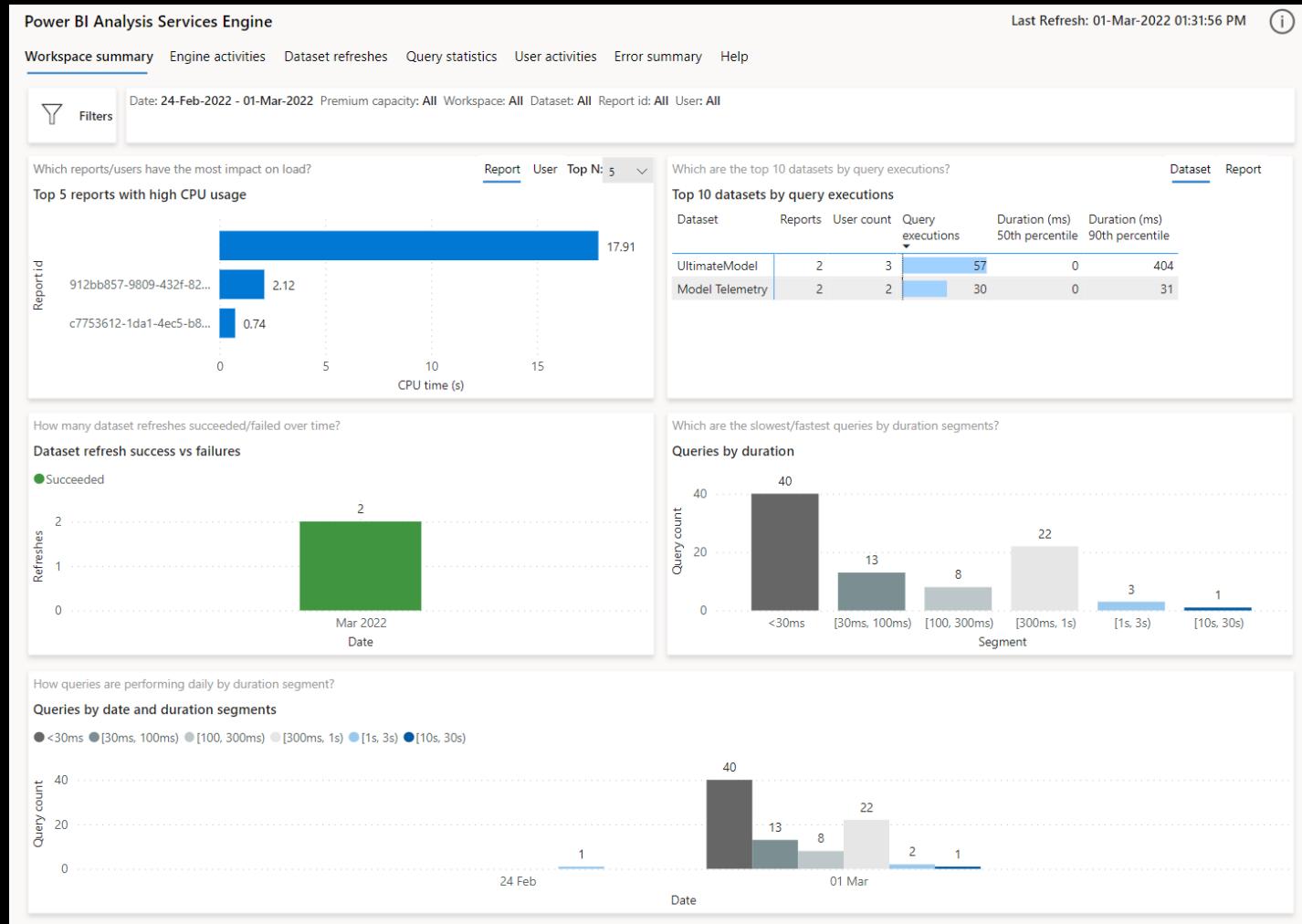
Configure Azure Monitor integration on Power BI workspace level to allow workspace administrators to collect, analyze and act on telemetry data. PBI integration with ALA exposes events from the Analysis Services engine.



Scenarios

- Identify high or unusual engine activity by capacity / ws / user
- Analyze query performance
- Analyze dataset refresh durations and engine operations
- Investigate impact of custom operations via Premium XMLA

Template report to get insights



- Workspace summary
- Engine activities
- Dataset refreshes
- Query statistics
- Error summary

Demo

Dataset telemetry insights



Power BI Analysis Services Engine

Power BI Analysis Services Engine Last Refresh: 31-Aug-2021 03:23:45 PM ⓘ ⏪

Workspace summary Engine activities Dataset refreshes Query statistics **User activities** Error summary Help

Filters Date: 02-Aug-2021 - 31-Aug-2021 Premium capacity: All Wokspace: All Dataset: All Report id: All User: All

Top 5 users by operation

User	Operations
f74879ff81d94807a...	2,548
bd0e6a9d01aeb180d...	2,107
7e5e12d28c27808d1...	2,006
6f80c7eb8ca4b36d06...	1,556
f219bc8d882eddc59f...	1,370

Queries vs CPU time by users

Daily user and operation count

Hourly user and operation count

User details

User	Last active date	Dataset	Report	Operations	Refreshes	Queries	Avg CPU time	Avg duration (ms)
00cb9564a7b034cae5d03714cb23b540	31-Aug-2021	5	1	423	105	12	954,885	120
0128eb4ff809385d9ef4a5f6e72180b0	31-Aug-2021	2	2	62	76	33	63	129
022933a63c6eb677e0433e5924cd6f70	31-Aug-2021	2	2	199	67	73	424	228
0271eb53a3f942a5204a1427a56dfd9f	31-Aug-2021	3	3	438	201	51	171	111
02c4ce099350c133cc2461d8f79aff8	31-Aug-2021	4	4	96	34	57	111	152
02f2bc7a7c7a21a8069b4447a89ff68ef	31-Aug-2021	2	2	38	7	100	139	139
0394d214768430b3e6866e63a995c5a1	31-Aug-2021	2	2	209	78	37	120	120

BLUE ROCKET
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Power BI Analysis Services Engine

Power BI Analysis Services Engine | Last Refresh: 01-Oct-2021 01:30:46 PM [i](#) [e](#)

Workspace summary Engine activities Dataset refreshes Query statistics User activities Error summary Help

Filters User: All Scenario: All

CPU time (s) and count of operations by scenarios over period of time

Discover completed Query completed — Count of operations

200

150

100

50

0

0.71K

0.15K

0.01K

800

600

CPU time (s)

Count of operations

Sep 28 Date

Operations (711)

Start date/time	User	Application	Operation	Scenario	CPU time (ms)	Event text	Duration (ms)	Xmla request id
28-Sep-2021 07:21:49 AM	ea1f1a2d4e0f70000000000000000004		DiscoverEnd	Discover completed	0	<pii><RestrictionList x...	0	f0676ec7-1cb9-43bc-858f-1ac286cfbd81
28-Sep-2021 07:21:49 AM	ea1f1a2d4e0f70000000000000000004		SessionInitialize	User session started		<pii>MSXInsightsDefau...	0	f0676ec7-1cb9-43bc-858f-1ac286cfbd81
28-Sep-2021 07:21:49 AM	ea1f1a2d4e0f70000000000000000004		DiscoverEnd	Discover completed	0	<pii><RestrictionList x...	0	d6f37444-c77e-41f4-99c1-8c45298c9a2c
28-Sep-2021 07:21:49 AM	ea1f1a2d4e0f70000000000000000004		DiscoverEnd	Discover completed	0	<pii><RestrictionList x...	0	6f27dc97-daaf-45e8-bfa4-d425148a93cc
28-Sep-2021 07:21:50 AM	ea1f1a2d4e0f70000000000000000004		DiscoverEnd	Discover completed	641	<pii><RestrictionList x...	643	6d7e58d3-097e-4a83-83eb-8438aaa5afc2
28-Sep-2021 07:21:56 AM	ea1f1a2d4e0f70000000000000000004		DiscoverEnd	Discover completed	16	<pii><RestrictionList x...	0	17dc51ed-d032-4886-b1a9-890415fe328d
28-Sep-2021 07:21:56 AM	ea1f1a2d4e0f70000000000000000004		DiscoverEnd	Discover completed	0	<pii><RestrictionList x...	0	20bc987b-b4cb-419e-a515-00b2fe38f588
28-Sep-2021 07:21:56 AM	ea1f1a2d4e0f70000000000000000004		SessionInitialize	User session started		<pii>MSXInsightsDefau...	0	17dc51ed-d032-4886-b1a9-890415fe328d
28-Sep-2021 07:21:56 AM	ea1f1a2d4e0f70000000000000000004		SessionInitialize	User session started		<pii>MSXInsightsDefau...	0	20bc987b-b4cb-419e-a515-00b2fe38f588
28-Sep-2021 07:21:56 AM	ea1f1a2d4e0f70000000000000000004		DiscoverEnd	Discover completed	16	<pii><RestrictionList x...	0	9fa65e69-635f-424d-b5ac-e4c5b8627146
28-Sep-2021 07:21:56 AM	ea1f1a2d4e0f70000000000000000004		DiscoverEnd	Discover completed	16	<pii><RestrictionList x...	0	a437c347-8886-464b-8b5d-f339a21dc36
28-Sep-2021 07:21:56 AM	ea1f1a2d4e0f70000000000000000004		DiscoverEnd	Discover completed	0	<pii><RestrictionList x...	0	a37449d2-882c-47e7-ae82-ecb7182bf43
Total					163,528		152,116	

[<](#) [>](#)

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Power BI Analysis Services Engine

Power BI Analysis Services Engine

Last Refresh: 01-Oct-2021 01:30:46 PM [i](#) [e](#)

Workspace summary Engine activities Dataset refreshes Query statistics **User activities** Error summary Help

Filters Date: 26-Sep-2021 - 01-Oct-2021 Premium capacity: All Wokspace: All Dataset: All Report id: All User: All

Operations Queries Top N: 5

Top 5 users by operation

User	Operations
3f7ecc014cc48b5cf2...	222
ea1a7a2ca8ae278b6...	198
335989582a9c58801...	110
27f4484675f0aaaf256...	107
d661cf332ee8e0cbd...	107

Queries vs CPU time by users

46 Users

2,454 Operations

Daily user and operation count

Date	Users	Operations
Sep 26	0.00K	0.10K
Sep 27	0.46K	0.01K
Sep 28	0.71K	0.02K
Sep 29	0.01K	0.47K
Sep 30	0.68K	0.01K
Oct 01	0.00K	0.02K

Hourly user and operation count

Hour	Users	Operations
0	0.00K	0.00K
1	0.02K	0.00K
2	0.00K	0.00K
3	0.19K	0.00K
4	0.00K	0.00K
5	0.09K	0.00K
6	0.23K	0.35K
7	0.37K	0.00K
8	0.00K	0.00K
9	0.00K	0.00K
10	0.00K	0.00K
11	0.00K	0.00K
12	0.00K	0.00K
13	0.00K	0.00K
14	0.00K	0.00K
15	0.00K	0.00K
16	0.00K	0.00K
17	0.00K	0.00K
18	0.00K	0.00K
19	0.00K	0.00K
20	0.00K	0.00K
21	0.00K	0.00K
22	0.00K	0.00K
23	0.00K	0.00K
24	0.00K	0.00K

User details

User	Last active date	Dataset	Report	Operations	Refreshes	Queries	Avg CPU time	Avg duration (ms)
3f7ecc014cc48b5cf2...	01-Oct-2021	2	2	222		115	219	228
ea1a7a2ca8ae278b6...	01-Oct-2021	2	2	198		43	133	132
335989582a9c58801...	01-Oct-2021	2	2	110		58	72	104
27f4484675f0aaaf256...	01-Oct-2021	2	3	107		32	316	340
d661cf332ee8e0cbd...	01-Oct-2021	2	2	107		49	75	70
f22a8a74a2903f3d04...	01-Oct-2021	2	2	106		77	156	166
f6c047f0e987070407...	01-Oct-2021	2	2	90		64	186	181
Total	01-Oct-2021	4	6	2,454		959	196	178

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Power BI Analysis Services Engine

Power BI Analysis Services Engine

Last Refresh: 31-Aug-2021 03:23:45 PM

Workspace summary **Engine activities** Dataset refreshes Query statistics User activities Error summary Help

Date: 02-Aug-2021 - 31-Aug-2021 Premium capacity: All Dataset: All Report id: All Scenario: All

Filters

How much is the daily CPU usage and operations count by the scenario?

CPU Time (s) and Count of operations by Date and Scenario

Discover completed (blue dot), Query completed (green dot), Refresh completed (yellow dot), Count of operations (dashed line)

What is CPU time, duration and operations count by capacity, workspace, dataset and report?

Capacity | Workspace | Dataset | Report

	Operations	CPU time (ms)	Duration (ms)	50th percentile	90th percentile
■ A9CE1428-DCB1-4...	28,678	1,857,326	219	856	
■ b10f1e5a-6a10-4...	29,345	767,780	0	47	
■ 857ad480-fbee-46de-940f-bd5c9e3e...	9	190	47	71	
■ MSXI...	17,260	638,532	0	16	
■ 5203c2d4-7d40-4e1e-9127-210c67a...	6,979	609,304	266	1,189	
■ a98bbd56-6846-46a4-9ed0-3447c5a...	3,509	414,467	404	2,542	
■ be5ba108-d7c7-4b4e-8987-25973ee...	1,469	141,679	406	1,141	
■ 60d2bb92-b8be-4934-8f99-a4984aa...	1,641	124,791	281	1,564	
■ 4cd5ce4b-b0a2-4c46-aecc-536c1235...	13	4,486	594	1,812	
■ MSXI...	4,273	287,424	94	453	
■ 2b2b0b90-79d0-48b3-994f-cea249a...	6,383	271,390	0	16	
■ 861b1d09-7a7c-48c1-9864-43240de...	135	6,862	47	345	
■	4,266	15,107	0	16	
■ SMSP...	5	1,843	0	0	

Which are the peak hours with CPU usage?

CPU time (ms) and count of operations by hour and scenario

Discover completed (blue dot), Query completed (green dot), Refresh completed (yellow dot), Count of operations (dashed line)

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Power BI Analysis Services Engine

Power BI Analysis Services Engine Last Refresh: 01-Oct-2021 01:30:46 PM ⓘ ⏪

Workspace summary Engine activities Dataset refreshes **Query statistics** User activities Error summary Help

Filters Date: 26-Sep-2021 - 01-Oct-2021 Premium capacity: All Dataset mode: All Dataset: All Report id: All User: All

Query success vs failures count

Queries Date Succeeded Failed

Date	Succeeded	Failed
Sep 26	0.03K	0
Sep 27	0.16K	0
Sep 28	0.33K	0
Sep 29	0.15K	0
Sep 30	0.28K	0
Oct 01	0.0K	0

Queries by aggregation usage

No: 959 (100%)

Queries by date and segment

Query count Date Segment

Date	<30ms	[30ms, 100ms]	[100ms, 300ms]	[300ms, 1s]	[1s, 3s]	[3s, 10s]
26-Sep-2021	1	4	7	10	11	0
27-Sep-2021	5	48	26	70	10	0
28-Sep-2021	12	87	86	128	19	2
29-Sep-2021	9	40	32	61	8	0
30-Sep-2021	12	79	61	105	19	1
01-Oct-2021	1	2	3	0	0	0

Duration CPU time Top N: 5 ▾

Top 5 queries by duration P50

Category	Count	Duration std dev %	Duration (ms) 50th percentile	Duration (ms) 90th percentile	Max duration (ms)
Capacity	3	15%	7,119	7,486	7,578
Workspace	1	0%	2,381	2,381	2,381
Dataset	1	0%	2,381	2,381	2,381
Report	1	0%	2,381	2,381	2,381
Query	1	0%	2,381	2,381	2,381

Count Duration std dev % Duration (ms) 50th percentile Duration (ms) 90th percentile Max duration (ms)

DEFINE VAR _DSOFilterTable =

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Power BI Analysis Services Engine

Power BI Analysis Services Engine Last Refresh: 31-Aug-2021 03:23:45 PM (i)

[Workspace summary](#) [Engine activities](#) [Dataset refreshes](#) [Query statistics](#) [User activities](#) [Error summary](#) [Help](#)

Filters Date: 02-Aug-2021 - 31-Aug-2021 Premium capacity: All Workspace: All Dataset: All Report id: All User: All

Report User Top N: 5

Top reports with high CPU usage

Report id	CPU Time (s)
602e4211-2dc9-4977-bb...	1857.33
5203c2d4-7d40-4e1e-91...	1694.65
a98bbd56-6846-46a4-9e...	609.30
2b2b0b90-79d0-48b3-9...	414.47
2b2b0b90-79d0-48b3-9...	287.42

Dataset Report

Top 10 datasets by query executions

Dataset	Reports	User count	Query executions	Duration (ms) 50th Percentile	Duration (ms) 90th Percentile
SMSPI...	3	414	29,886	47	564
MSXIC...	6	324	13,910	0	833
MSXIC...	3	163	4,454	0	359

Dataset refresh success vs failures

● Succeeded

Date	Refreshes
Aug 03	12
Aug 04	26
Aug 05	25
Aug 06	23
Aug 07	9
Aug 08	4
Aug 09	6

Queries by duration

Segment	Query count
<30ms	2,343
[30ms, 100ms]	14,468
[100, 300ms]	11,841
[300ms, 1s]	14,976
[1s, 3s]	4,143
[3s, 10s]	470
[10s, 30s]	7
>30s	2

Queries by date and duration segments

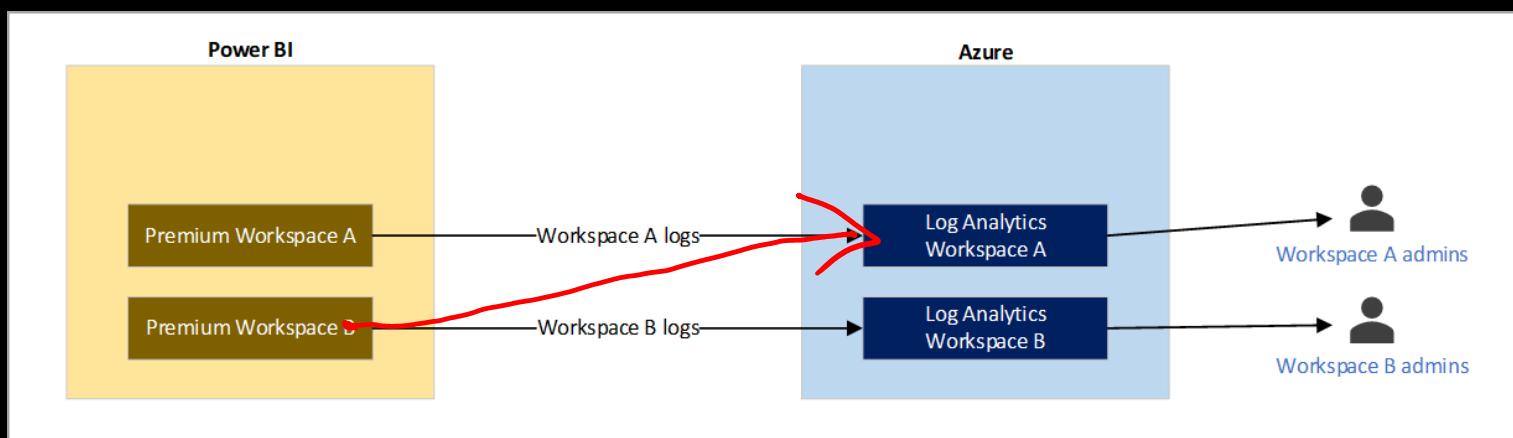
● <30ms ● [30ms, 100ms] ● [100, 300ms] ● [300ms, 1s] ● [1s, 3s] ● [3s, 10s] ● [10s, 30s] ● >30s

Date	<30ms	[30ms, 100ms]	[100, 300ms]	[300ms, 1s]	[1s, 3s]	[3s, 10s]	[10s, 30s]	>30s
02 Aug	643	3,580	3,517	864	75	2		
03 Aug	436	3,319	3,393	772	120	2	2	
04 Aug	141	678	785	214	22			
05 Aug	67	440	487	20	1			
06 Aug	62	373	422	10				
08 Aug	17	81	72	104	26			

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Configuration pre-requisites – Generic

- Only Premium
- Only v2 workspaces (default)
- Only for the datasets in the workspace (no shared datasets)
- 1:1 connection between Power BI workspace and ALA workspace

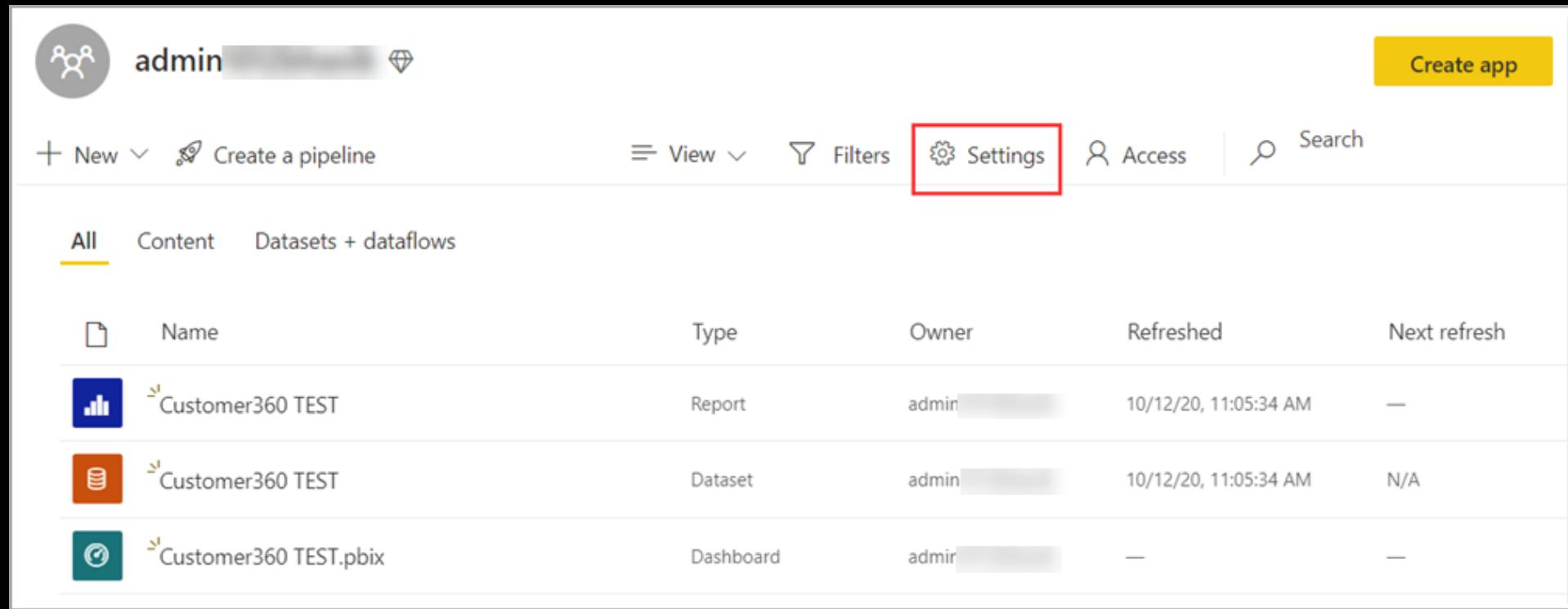


Configuration

The screenshot shows the Power BI Admin portal interface. The top navigation bar includes the organization name "Data-Marc.com" and the "Power BI Admin portal". The left sidebar contains a list of administrative settings with icons: Tenant settings (selected), Usage metrics, Users, Premium Per User, Audit logs, Capacity settings, Refresh summary, Embed Codes, Organizational visuals, Azure connections, and Workspaces.

The "Tenant settings" section is currently active. It displays the setting "Azure Log Analytics connections for workspace administrators" with the status "Enabled for the entire organization". A toggle switch is set to "Enabled". Below this, there are three options under "Apply to": "The entire organization" (radio button selected), "Specific security groups" (radio button unselected), and "Except specific security groups" (checkbox unselected). At the bottom of the configuration panel are "Apply" and "Cancel" buttons.

Configuration



The screenshot shows the Microsoft Power BI Admin Center interface. At the top, there is a navigation bar with a user profile icon, the name "admin" followed by a blurred email address, and a "Create app" button. Below the navigation bar are several tabs: "View", "Filters", "Settings" (which is highlighted with a red box), "Access", and "Search". Underneath these tabs, there are three main categories: "All", "Content", and "Datasets + dataflows". The "All" category is selected and underlined. The "Content" section displays a table with three items:

Name	Type	Owner	Refreshed	Next refresh
Customer360 TEST	Report	admin [blurred]	10/12/20, 11:05:34 AM	—
Customer360 TEST	Dataset	admin [blurred]	10/12/20, 11:05:34 AM	N/A
Customer360 TEST.pbix	Dashboard	admin [blurred]	—	—

Configuration

⚙️ Settings

SQL Bits

About Premium Azure connections

▷ Storage

▫ Log Analytics

Connect an Azure Log Analytics workspace to collect usage and performance logs for this workspace. [Learn more](#)

Connect to Azure

Subscription

Microsoft Azure Sponsorship - MV... ▾

Resource group

RG-WE-SqlBits ▾

Log Analytics workspace

ala-we-sqlbits-prod

Save Cancel

⚙️ Settings

SQL Bits

About Premium Azure connections

▷ Storage

▫ Log Analytics

Connect an Azure Log Analytics workspace to collect usage and performance logs for this workspace. [Learn more](#)

Subscription RG-WE-SqlBits

Resource group RG-WE-SqlBits

Log Analytics workspace ala-powerbi-connected

Configured by Demo User on 2022-03-01T12:00:00Z

Disconnect from Azure

Disconnecting will stop usage and performance data from flowing into your Azure Log Analytics workspace.

Disconnect from Azure

Configuration

Go to [AppSource > Power BI Log Analytics for Analysis Services Engine](#)

and select **Get it now.**

The screenshot shows the Microsoft AppSource page for the "Power BI Log Analytics for AS Engine (Preview)" app. The page includes the Microsoft logo, a search bar, and navigation links for AppSource, Apps, Consulting Services, Industry Clouds, and Partners. The main content area displays the app's icon (a cube with a bar chart), its name, developer (Microsoft), category (Power BI apps), pricing (Free), and a "Get it now" button. Below this, there are tabs for Overview, Ratings + reviews, and Details + support. The "Overview" tab contains a brief description: "The app provides admins with insights into dataset usage and performance from AS engine traces. This app will connect to the pre-configured Azure Log Analytics workspace where you are collecting Analysis Services engine log data. The app can be used to monitor engine load, engine usage trends, and identify slow queries and dataset refreshes. It provides summary and trend information at Workspace level with the ability to drill to detail about any individual query or dataset refresh. The app allows you to group or slice the data by useful properties such as Premium capacity, dataset, report, and user." Below the description are five screenshots showing various Power BI dashboards with charts and tables. At the bottom, there are sections for "Other apps from Microsoft" featuring the "Power BI Premium Capacity Utilization an..." and "Power BI Premium Capacity Metrics App" apps, each with their own icons, developer information, descriptions, ratings (1.7 and 3.0 respectively), and "Get it now" buttons.

Configuration pre-requisites – Azure

- Register '**microsoft.insights**' resource provider in subscription
- Create Log Analytics Workspace
- **Owner** role on the Log Analytics Workspace for:
 - The user who will set up Log Analytics integration in Power BI
 - The service principal '**Power BI Service**'
- Note: change the **retention period**

Cost info

REGION:
West Europe

Log Analytics €105.53

ⓘ Daily log data ingested will depend on what you are monitoring with Log Analytics. [Learn more](#) about estimating data volumes.

Data Ingestion

1	×	30	×	€2.68	=	€67.05
DAILY LOGS INGESTED (GB/DAY)		Days		Per GB		

ⓘ This estimate is calculated using the most optimal pricing tier for the data ingestion. This calculation uses **Pay-As-You-Go tier**. [Learn more](#) about the pricing tiers

Data Retention

ⓘ The first month of retention is free

12						→
TOTAL RETENTION (MONTHS)						
30	×	11	×	€0.12	=	€38.48
Total monthly ingestion (GB)		Additional retention (months)		Per GB/month		

Ad-blocker?

The screenshot shows a dark-themed web interface with a navigation bar at the top containing icons for search, refresh, and user profile, along with the email address `inbox@daveruijter.nl` and name `MARC LELIUVELD`. Below this is a large red header with the word **Notifications** and a close button (**X**). A link to **More events in the activity log** is visible. On the right, there is a **Dismiss all** button with a dropdown arrow. The main content area displays a single notification card. The card has a red exclamation mark icon and the message: **Failed to retrieve schema. Please try to refresh the page.** It includes a detailed explanation: **We have experienced a connection issue while retrieving data. This is usually an indication that the network is down or a firewall or browser extension (such as an ad blocker) is mistakenly preventing access.** Below this, it says **Connection Error** and provides a **Request id: 256ea54b-65a6-4257-b248-a000e699c24e**. At the bottom of the card, the timestamp **a few seconds ago** is shown.

Example KQLs

```
// log count per day for last 30d  
PowerBIDatasetsWorkspace  
| where TimeGenerated > ago(30d)  
| summarize count() by format_datetime(  
TimeGenerated, 'yyyy-MM-dd')
```

```
// average query duration by day for last 30d  
PowerBIDatasetsWorkspace  
| where TimeGenerated > ago(30d)  
| where OperationName == 'QueryEnd'  
| summarize avg(DurationMs) by  
format_datetime(TimeGenerated, 'yyyy-MM-dd')
```

```
//query duration percentiles for a single day in 1 hour bins  
PowerBIDatasetsWorkspace  
| where TimeGenerated >= todatetime('2021-04-28') and  
TimeGenerated <= todatetime('2021-04-29')  
| where OperationName == 'QueryEnd'  
| summarize percentiles(DurationMs, 0.5, 0.9) by  
bin(TimeGenerated, 1h)
```

```
// refresh durations by workspace and dataset for last 7d  
PowerBIDatasetsWorkspace  
| where TimeGenerated > ago(30d)  
| where OperationName == 'CommandEnd'  
| where ExecutingUser contains 'system'  
| where EventText contains 'refresh'  
| project WorkspaceName, DatasetName = ArtifactName,  
DurationMs
```

Using the template report

Power BI Log Analytics for Analysis Services Engine

This template will connect to the pre-configured Azure Log Analytics workspace where you are collecting Analysis Services engine log data. The template can be used to monitor engine load, engine usage trends, and identify slow queries and dataset refreshes. It provides summary and trend information at Workspace level with the ability to drill to detail about any individual query or dataset refresh. The template allows you to group or slice the data by useful properties such as Premium capacity, dataset, report, and user.

Days Ago To Start ⓘ:

Days Ago To Finish ⓘ:

Log Analytics Table ⓘ:

Log Analytics WorkspaceId ⓘ:

UTC Offset Hours ⓘ:

Pagination Hours ⓘ:

GitHub location for .pbix

<https://github.com/microsoft/PowerBI-LogAnalytics-Template-Reports>

Roadmap

- GA → ??
- Removing the 1:1 workspace mapping restriction
- No tenant level configuration to be expected
- Capacity level configuration to be expected
- API control to configure multiple workspaces at once

Usage & adoption monitoring

How is your Power BI content used, by whom and maybe even identify odd patterns



Why do you need to monitor?

Everyone can do their own analysis



But we're lacking in terms of...



Control



Data sensitivity



Correctness



Solution health

... and more

Importance of monitoring



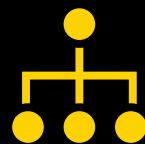
Content availability



Usage



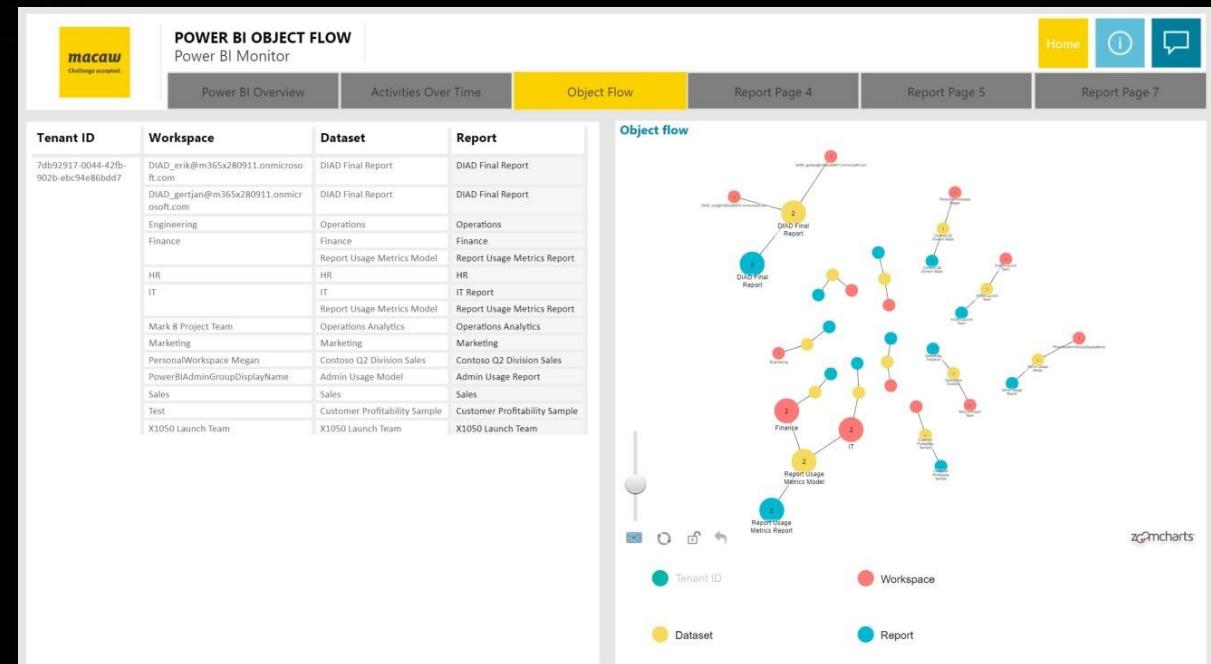
Performance



Lineage



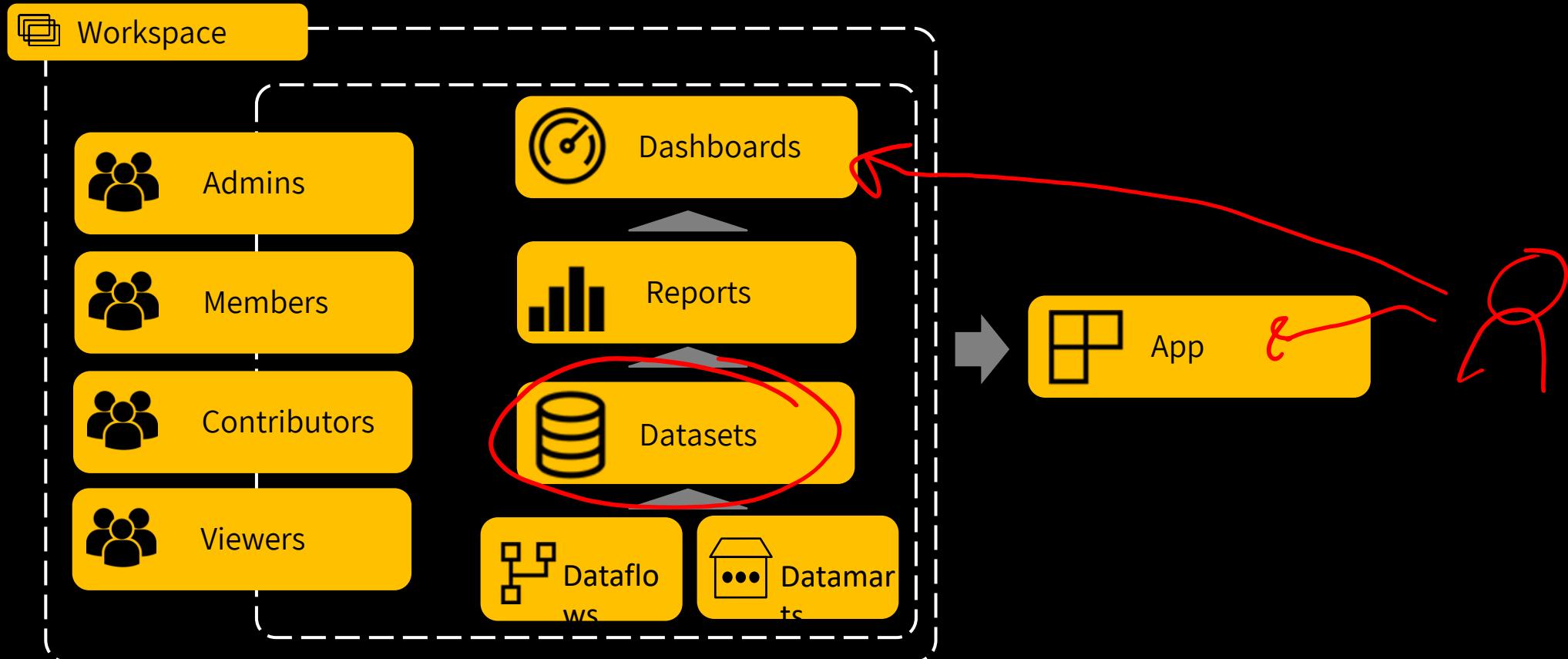
Environmental health



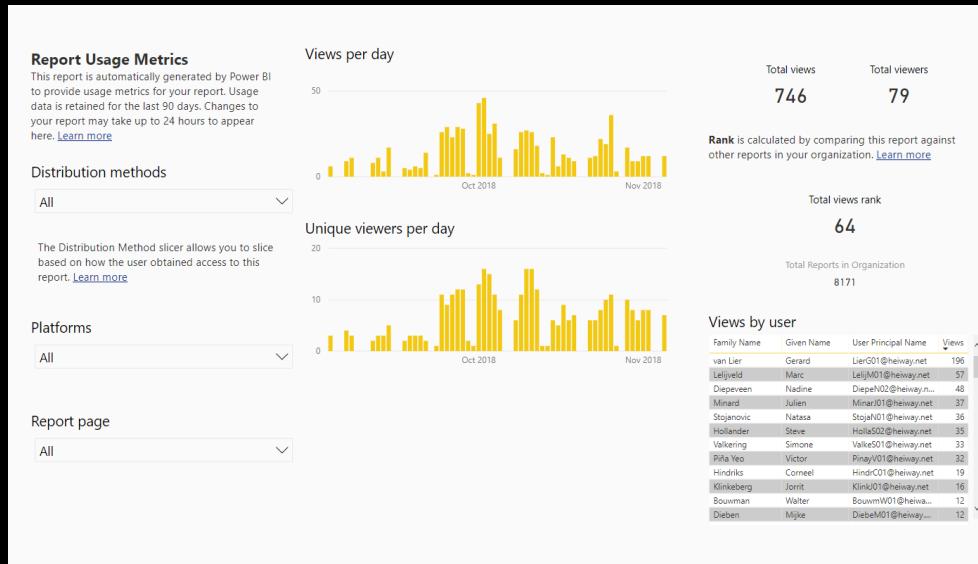
Things to monitor

-  Secure data uploaded to the service
-  Publish data to the entire organisation
-  Share content to external users
-  Publish to web
-  Custom visuals
-  Audit logs

What objects are available



What the Power BI service provides



Usage Metrics in Power BI Service

The screenshot shows the 'Audit log search' results page with 532 results found. It includes:

Date	User	Activity	Item
2015-12-13 22:48:55	vasil@michev.info	PasswordLogonInitialAut...	vasil@michev.info
2015-12-13 22:41:55	vasil@michev.info	PasswordLogonInitialAut...	vasil@michev.info
2015-12-13 20:49:26	vasil@michev.info	Deleted messages from...	
2015-12-13 20:45:43	vasil@michev.info	Accessed file	vasil_michev_info_SThum...
2015-12-13 20:45:43	vasil@michev.info	Viewed file	vasil_michev_info_SThum...
2015-12-13 20:35:27	vasil@michev.info	Created or received mes...	
2015-12-13 20:29:01	vasil@michev.info	Update user.	vasil@michev.info
2015-12-13 20:28:18	vasil@michev.info	Update user.	vasil@michev.info
2015-12-13 20:27:26	vasil@michev.info	User signed in to mailbox	

Audit logs in M365 admin portal (manually)

Audit Logs

Power BI activities			
Viewed Power BI dashboard	Created Power BI dashboard	Set scheduled refresh on Power BI dataset	Unpublished Power BI app
Edited Power BI dashboard	Deleted Power BI dashboard	Deleted organizational Power BI content pack	Renamed Power BI dashboard
Shared Power BI dashboard	Printed Power BI dashboard	Edited Power BI dataset	Shared Power BI report
Viewed Power BI tile	Exported Power BI tile data	Generated Power BI Embed Token	Discovered Power BI dataset data sources
Viewed Power BI report	Deleted Power BI report	Updated Power BI dataset data sources	Requested Power BI dataset refresh
Printed Power BI report page	Downloaded Power BI report	Binded Power BI dataset to gateway	Changed Power BI dataset connections
Published Power BI report to web	Exported Power BI report visual data	Took over Power BI dataset	Updated Power BI gateway data source credentials
Created Power BI report	Edited Power BI report	Imported file to Power BI	Updated Power BI dataset parameters
Created Power BI dataset	Deleted Power BI dataset	Generated Power BI datapool SAS token	Created Power BI datapool
Created Power BI group	Deleted Power BI group	Updated Power BI datapool	Deleted Power BI datapool
Added Power BI group members	Removed Power BI group members	Viewed Power BI datapool	Exported Power BI datapool
Created organizational Power BI content pack	Created Power BI app	Set scheduled refresh on Power BI datapool	Requested Power BI datapool refresh
Installed Power BI app	Updated Power BI app	Received Power BI datapool secret from Key Vault	Created Power BI email subscription
Updated organization's Power BI settings	Started Power BI trial	Updated Power BI email subscription	Deleted Power BI email subscription
Started Power BI extended trial	Analyzed Power BI dataset	Created Power BI folder	Deleted Power BI folder
Created Power BI gateway	Deleted Power BI gateway	Updated Power BI folder	Added Power BI folder access
Added data source to Power BI gateway	Removed data source from Power BI gateway	Deleted Power BI folder access	Updated Power BI folder access
Changed Power BI gateway admins	Changed Power BI gateway data source use	Posted Power BI comment	Deleted Power BI comment
		Analyzed Power BI report	Viewed Power BI usage metrics

What the Power BI admin portal offers

Admin portal

Usage metrics

Number of User Dashboards Number of User Reports Number of User Datasets

54 101 102

Most Consumed Dashboards by Users

GivenName FamilyName Count of DashboardId

GivenName	FamilyName	Count of DashboardId
John	Doe	25
Jane	Doe	13
Mike	Smith	11
Alice	Johnson	8
Bob	Williams	5
David	Miller	2
Emily	Wilson	1
Frank	Anderson	1
Grace	Howard	1
Henry	Wong	1

Total: 54

Most Consumed Packages by Users

Top Users with Most Reports

GivenName	FamilyName	Count of Id
John	Doe	42
Jane	Doe	22
Mike	Smith	16
Alice	Johnson	11
Bob	Williams	6
David	Miller	4
Emily	Wilson	1

Power BI REST API

Power BI REST API provides service endpoints for embedding, administration, and user resources. The Power BI API can be used from both a user and a service principal perspective. In all scenarios, an Azure Active Directory App Registration is needed with the right permissions granted, in order to interact with the Power BI REST API.



Power BI REST API

GET https://api.powerbi.com/v1.0/myorg/~~admin~~/groups/{groupId}/reports

```
{  
  "value": [  
    {  
      "datasetId": "cfafbeb1-8037-4d0c-896e-a46fb27ff229",  
      "id": "5b218778-e7a5-4d73-8187-f10824047715",  
      "name": "SalesMarketing",  
      "webUrl": "https://app.powerbi.com/groups/f089354e-8366-4e18-aea3-4cb4a3a50b48/reports/5b218778-e7a5-4d73-8187-f10824047715",  
      "embedUrl": "https://app.powerbi.com/reportEmbed?reportId=5b218778-e7a5-4d73-8187-f10824047715&grouped=true"  
    }  
  ]  
}
```

\$expand=

Sample Request

HTTP	Copy
GET https://api.powerbi.com/v1.0/myorg/admin/groups?\$expand=dashboards&\$top=100	

JSON	Copy
{ "value": [{ "id": "94E57E92-CEE2-486D-8CC8-218C97200579", "isReadOnly": false, "isOnDedicatedCapacity": false, "capacityMigrationStatus": "Migrated", "description": "shorter description", "type": "Workspace", "state": "Removing", "name": "a", "dashboards": [{ "id": "4668133c-ae3f-42fb-ad7c-214a8623280c", "displayName": "SQLAzure-Refresh.pbix", "isReadOnly": false }, { "id": "a8f18ca7-63e8-4220-bc1c-f576ec180b98", "displayName": "cdvc", "isReadOnly": false }] }] }	

Power BI Cmdlets - PowerShell Module

- Power BI General management
- Data Management
- Profile Management
- Report Management
- Workspace Management



Get-PowerBIWorkspace
[-Scope <PowerBIUserScope>]
[-Filter <String>]
[-User <String>]
[-Deleted]
[-Orphaned]
[-First <Int32>]
[-Skip <Int32>]
[<CommonParameters>]

PowerShell

Pros

- Easy to get started
- Write locally to CSV etc.
- Good for ad-hoc

Cons

- Limited to out-of-the-box functions
- Rest API call = advanced
- Secret management
- Unattended execution

Power BI Monitor - architecture



Demo

Logic App collecting PBI related meta data



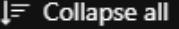
loganalytics-workspace-powerbi 

Run Time range: Last 24 hours

PBI_Workspaces_CL
| limit 50

Schema Filter (preview) 

Filter by name or type... 



Active

loganalytics-workspace-p... 

LogManagement

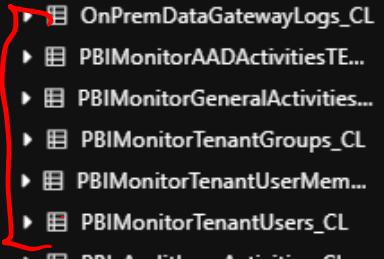
Custom Logs 

GatewayErrorLog_CL

GatewayInfoLog_CL

GatewayNetworkLog_CL

MyRecordType_CL

OnPremDataGatewayLogs_CL 

PBIMonitorAADActivitiesTE...

PBIMonitorGeneralActivities...

PBIMonitorTenantGroups_CL

PBIMonitorTenantUserMem...

PBIMonitorTenantUsers_CL

PBI_AuditLog_Activities_CL

PBI_Dashboards_CL

PBI_Datasets_CL

PBI_Reports_CL

PBI_WorkspaceUsers_CL

PBI_Workspaces_CL

PbiWorkspaces_CL

PowerBIWorkspaces_CL

Workspaces_CL

Functions

Favorites

Completed. Showing results from the last 24 hours. 00:00:00.543 50 records Display time (UTC+00:00)

TABLE CHART Columns Drag a column header and drop it here to group by that column

	id_g	isReadOnly_b	isOnDedicatedCapacity_b	name_s	capacityId_g	Type	_Res
1	82ccf334-fadf-4891-9b14-9319da9d276f	false	false	DIAD_gertjan@m365x280911.onmicrosoft.com		PBI_Workspaces_CL	
2	6b3d9f38-e241-418f-8120-c241eb4fd55e	false	false	DIAD_erik@m365x280911.onmicrosoft.com		PBI_Workspaces_CL	
3	bfdbe2eb-aa04-4630-8348-3d204b2a...	false	false	Mark 8 Project Team		PBI_Workspaces_CL	
4	d96efe56-e5c4-4b90-af2a-3f4a1e3715...	false	false	Engineering		PBI_Workspaces_CL	
5	5c4cd1e-52b9-420c-a40a-8ae0b6afb...	false	false	Finance		PBI_Workspaces_CL	
6	73767088-a768-497d-bca0-232f2b749...	false	false	Marketing		PBI_Workspaces_CL	
7	2440bc9c-2c53-456d-8745-343b2f3ca...	false	false	Sales		PBI_Workspaces_CL	
8	7f90a2a0-8910-4869-a430-17c0edf516fe	false	false	HR		PBI_Workspaces_CL	
9	2a448f2e-fd4a-4ccf-b251-c3b7bb6345...	false	false	IT		PBI_Workspaces_CL	
10	22c831a8-f13c-4a89-9ce6-eb7e71d4d8...	false	false	X1050 Launch Team		PBI_Workspaces_CL	
11	419ba4a1-fadd-4378-a7f8-41ae494abf...	false	false	Production Line		PBI_Workspaces_CL	
12	9d661a50-16ce-48fc-98e4-629e3b6b8...	false	false	Business Development		PBI_Workspaces_CL	
13	1d240e76-ac86-49ee-b4b8-34f9d571b...	false	false	DG-2000 Product Team		PBI_Workspaces_CL	
14	e24b202e-74db-4297-9ff8-ef90508bf...	false	false	DG-2000 Feedback		PBI_Workspaces_CL	

Demo

Analyzing ALA data in Power BI



Native future enhancements

Usage and adoption insights for tenant admins

Article • 01/10/2023 • 2 minutes to read • 3 contributors

 Feedback

 **Important**

Some of the functionality described in this release plan has not been released. Delivery timelines may change and projected functionality may not be released (see Microsoft policy). Learn more: [What's new and planned](#)

Enabled for	Public preview	General availability
Admins, makers, marketers, or analysts, automatically	Mar 2023	-

Business value

Power BI administrators need access to detailed historical metrics in order to monitor performance, understand usage and adoption growth, support audits, and ensure compliance within their Power BI environment.

What it will include

Metadata for Power BI items: Standalone dataset describing all known workspaces, reports, datasets, and other Power BI items, regardless of whether or not they are active. Initially, we'll provide an identifier and a name for key Power BI artifacts. Each artifact will have additional relevant attributes, such as last modified date or name, as appropriate

Audit logs: Provide information about asset lifecycle activities (create, access, modify, and delete). We'll provide access to some key audit log data directly through a Power BI dataset, so you won't need Microsoft 365 admin rights to view this audit data. The information will match the information available in the Power BI activity log.

Reusable standalone datasets: Audit log and metadata datasets will be available within the Admin Monitoring workspace, enabling you to leverage these resources by combining them with your own to enable customized reporting based on individual organizational scenarios.

Out-of-box feature usage and adoption reporting: Analytical views built on the audit log that can help you understand who is doing what. This allows you to better govern Power BI by identifying specific trends, patterns, and activities. For example, you may discourage direct report sharing from personal workspaces and may want to have visibility if it should happen.

What it might look like?

Pages < File Export Share Chat in Teams Get insights

Overview

Decomp

Activity details

Adoption Report | Overview

Date: 10/16/2022 11/15/2022

Overview Decomp Activity Details

Total Activities: 12,367

Active Counts: Users: 14 Capacities: 157 Workspaces: 155

Activities -> Users

Capacity -> Workspace by activity count

Premium Per User - Reserved Shared On Premium - Reserved Gen2_Cap1154 Gen2_Cap1156 Gen2_Cap1028 Gen1_Cap1028 Gen1_Cap1154 Gen1_Cap1020 Gen1_Cap1020 Gen1_Cap1020 Gen1_Cap1020 Gen1_Cap1020 Gen1_Cap1020

Activities

Top: All use this slicer to filter the top results on this visual

User: All use this slicer to filter the users on this visual

Capacity -> artifact type -> activity name by activity count

Premium Per User - Reserved Shared On Premium - Reserved Gen2_Cap1154 Gen2_Cap1156 Gen2_Cap1028 Gen1_Cap1028 Gen1_Cap1154 Gen1_Cap1020 Gen1_Cap1020 Gen1_Cap1020 Gen1_Cap1020 Gen1_Cap1020 Gen1_Cap1020

User ID by activity count

WebTestAdmin... Guests... user... anna... insula... vinni09... registrant... sally... lizun01...

The screenshot shows a Microsoft Power BI dashboard titled 'Adoption Report | Overview'. The left sidebar has links for 'Pages', 'Overview', 'Decomp', and 'Activity details'. A red arrow points from the 'Activity details' link towards the main content area. The main area has tabs for 'Overview', 'Decomp', and 'Activity Details', with 'Overview' selected. It displays several charts and tables. At the top is a bar chart for 'Total Activities' (12,367) and a line chart for 'Active Counts' over time (Nov 09 to Nov 11). Below that is a horizontal bar chart for 'Capacity -> Workspace by activity count', listing categories like 'Premium Per User - Reserved' and 'Shared On Premium - Reserved' with values like 920 and 242 respectively. Further down are two more horizontal bar charts: 'Capacity -> artifact type -> activity name by activity count' and 'User ID by activity count', both showing various activity names and their counts.

Non-functionals you should think about...

- Retention
- Privacy
- Availability
- Security
- Error handling
- Disaster recovery
- Cost management
- Documentation

Best Practice Analyzer

Find your weak spots,
identify and deploy fixes

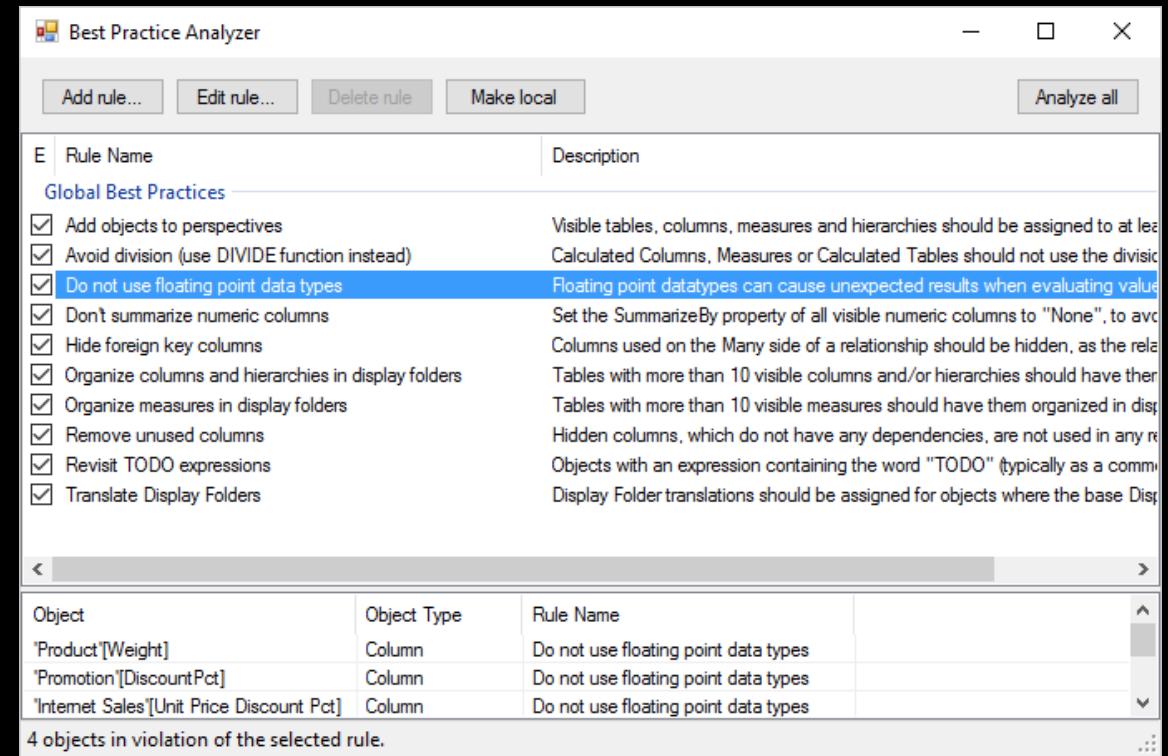


Why?

- Identify models that can be **improved** (performance, size, usability, manageability, transferability, correctness).
- Identity creators that you can **assist and educate**, so they can create higher quality models.
- Improve **utilization** of reserved capacity in Power BI Premium, as a decrease in model size or decrease in refresh duration has a direct positive effect on the availability of memory and cores in your dedicated capacity.

What is the Best Practice Analyzer?

- Pre-defined rules to check the metadata of your model
- Rules are defined in LINQ expressions
`String.IsNullOrEmpty(Expression) and not Name.StartsWith("Dummy")`
- Output on screen
- Ability to directly apply fixes to the model (C#)



Example BPA rules

- Avoid floating data types
- Avoiding bi-directional or many-to-many relationships
- Split Date & time in separate columns
- Reduce usage of DAX calculated columns
- Storage mode optimizations
- Formatting of measures

Demo

BPA on local file



How to run BPA on the entire tenant?

<https://www.moderndata.ai/2020/09/check-the-quality-of-all-power-bi-data-models-at-once-with-best-practice-analyzer-automation-bpa/>

- Catalogue Premium datasets
- Run Tabular Editor CLI
- Connect to XMLA endpoint of each dataset
- Run BPA
- Results temporarily saved
- Report on top of results to identify improvement areas

Demo

BPA on tenant level



BPA rules on GitHub

Github.com/microsoft/Analysis-Services/tree/master/BestPracticeRules

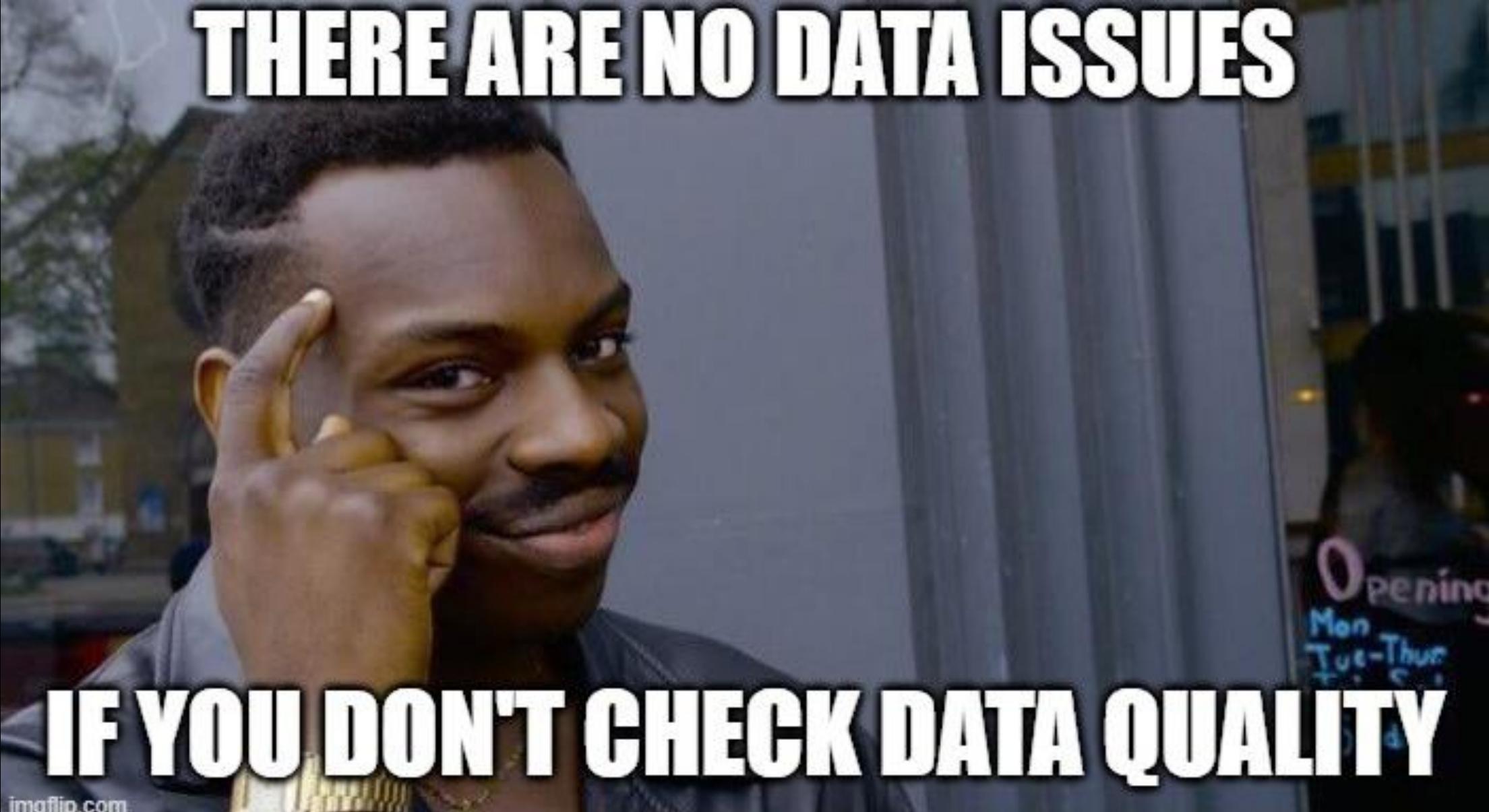
The screenshot shows the GitHub repository page for 'microsoft/Analysis-Services'. The repository is public and has 364 forks and 470 stars. The 'Code' tab is selected, showing the file tree for the 'master' branch. The tree includes 'Italian', 'Japanese', 'Spanish', 'BPARules.json', 'LoadBPARules.cs', and 'README.md' files, all updated by m-kovalsky 1.2.5 last month except for 'LoadBPARules.cs' which was updated 2 years ago.

File	Version	Last Commit
..	1.2.5	last month
Italian	1.2.5	last month
Japanese	1.2.5	last month
Spanish	1.2.5	last month
BPARules.json	1.2.5	last month
LoadBPARules.cs	Updated LoadBPARules script	2 years ago
README.md	1.2.5	last month

Data Quality Monitoring

Validate data quality
using Great Expectations





THERE ARE NO DATA ISSUES

IF YOU DON'T CHECK DATA QUALITY

imaflio.com

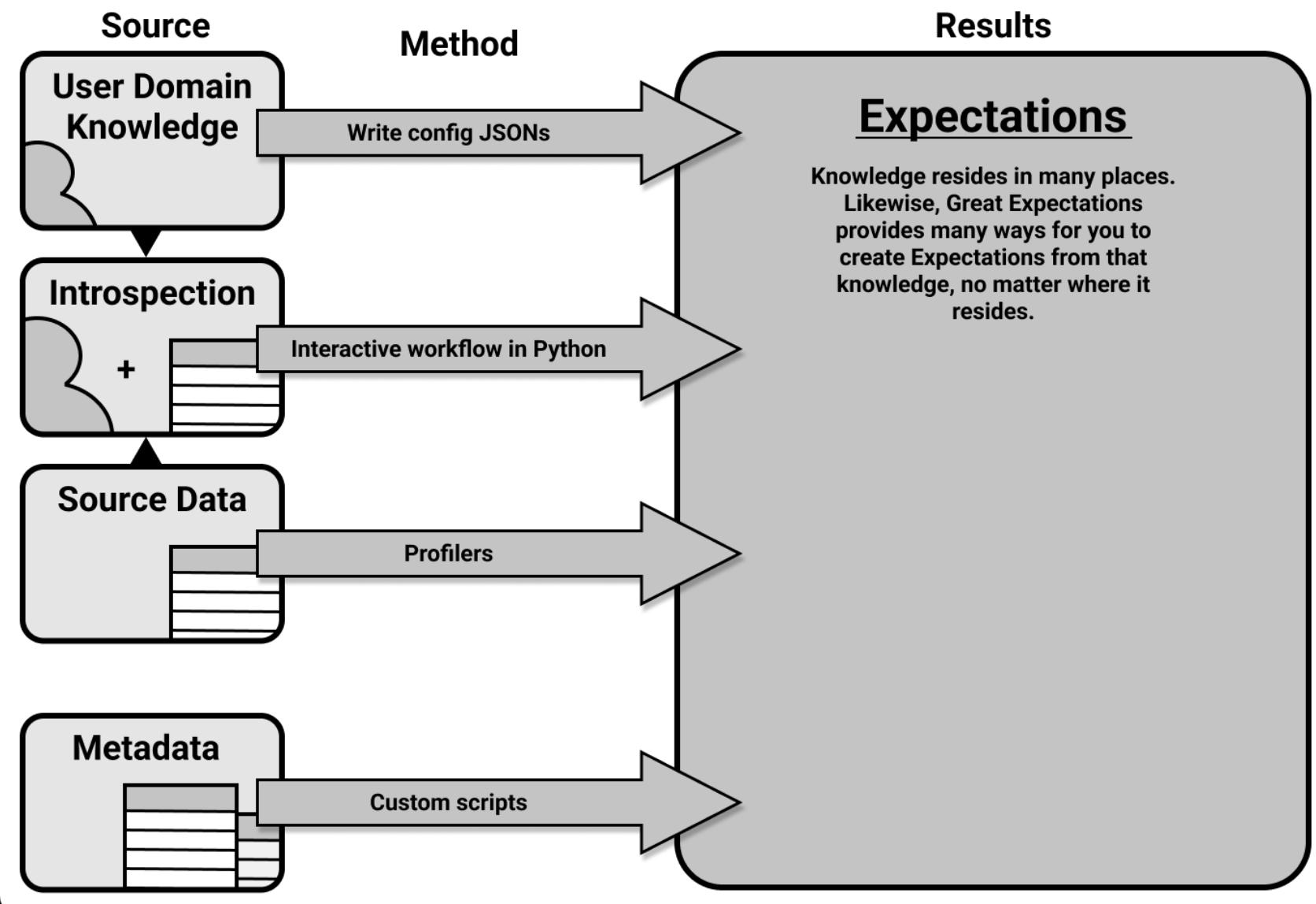
How to work with Great Expectations

- data testing
- documentation
- profiling

What are Expectations?

- `expect_column_to_exist`
- `expect_table_row_count_to_be_between`
- `expect_column_values_to_be_unique`
- `expect_column_values_to_be_between`
- `expect_column_values_to_match_regex`
- `expect_column_kl_divergence_to_be_less_than`

Where do Expectations come from?



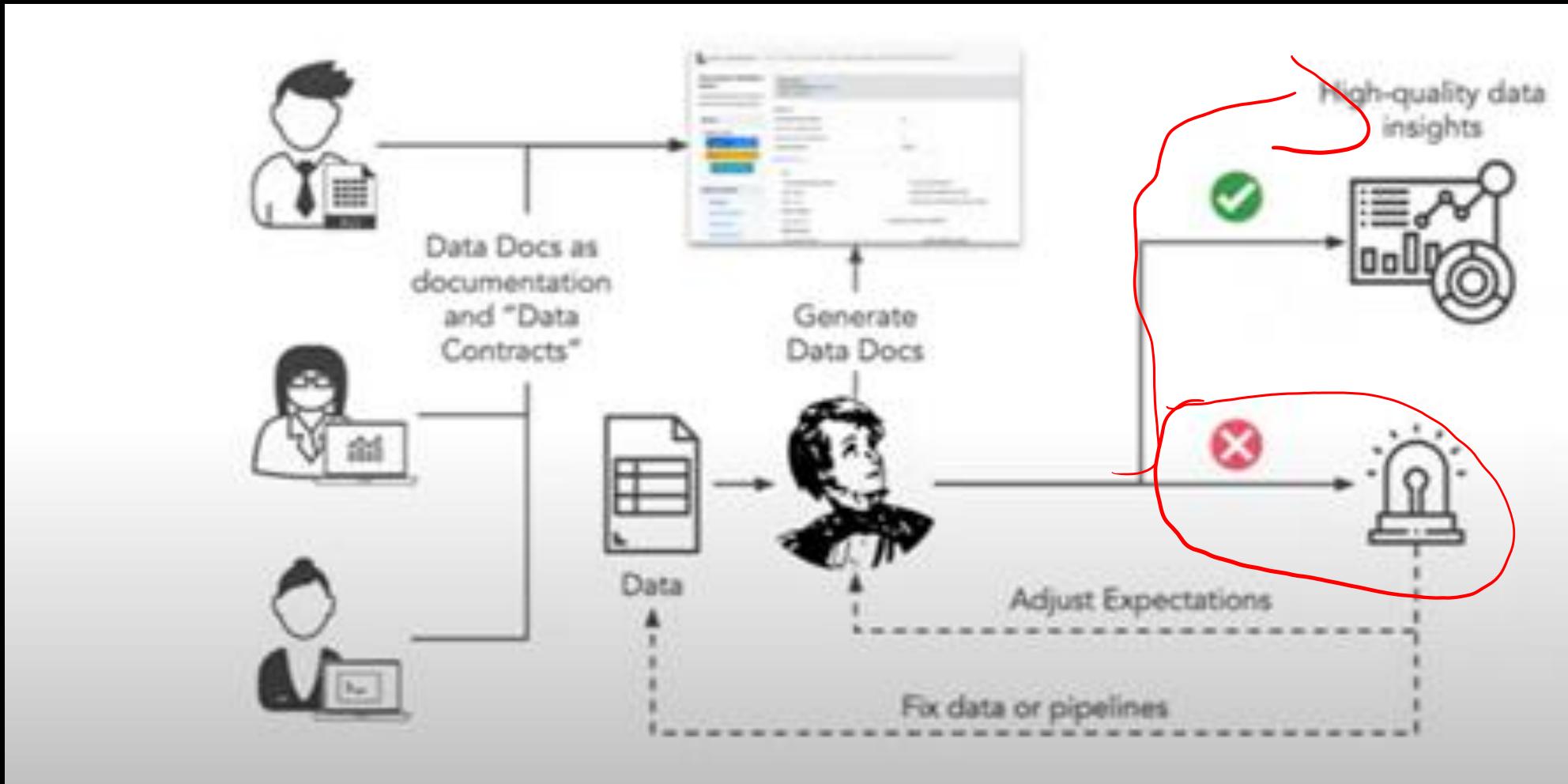
Validation result object

```
{  
  "success": false,  
  "result": {  
    "element_count": 253405,  
    "unexpected_count": 7602,  
    "unexpected_percent": 2.999  
  },  
  "expectation_config": {  
    "expectation_type": "expect_column_values_to_not_be_null",  
    "kwargs": {  
      "column": "user_id"  
    }  
  }  
}
```

Validation results save you time.

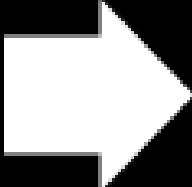
Status	Expectation	Observed Value
✓	values must never be null.	100% not null
✗	values must belong to this set: Y N .	≈20.08% unexpected
218612 unexpected values found. ≈20.08% of 1088696 total rows.		
Unexpected Value		Count
yes		10
no		4
No.		2
n		2
y		2

The workflows



Tests are docs and docs are tests

```
expect_column_values_to_be  
between (  
    column="room_temp",  
    min_value=60,  
    max_value=75,  
    mostly=.95  
)
```



"Values in this column should
be between 60 and 75, at
least 95% of the time."

"Warning: more than 5% of
values fell outside the
specified range of 60 to 75."

DataDocs on Azure

<https://dlswedataplatformlab.z6.web.core.windows.net/index.html>

GX for Azure Databricks



Libraries in cluster

	Name	Type	Status
<input type="checkbox"/>	great-expectations	PyPI	Installed
<input type="checkbox"/>	azure.identity	PyPI	Installed
<input type="checkbox"/>	azure-storage-blob	PyPI	Installed

Demo

GX on Databricks



GX for Power BI



Testing the data model, not the reports

- On datasets in the Power BI Service (not Desktop)
- Does not require Premium workspace

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

Validations

- *Exact value of 1 order*
- *Total value of 2020, 2021*
- *Complex measure*
 - *Percentage of something*
 - *Time intelligence*
 - *Period over period*
- *Verify if all dimension values (e.g. product brands) are accounted for*

Setup

Refresh | Got feedback?

Configured permissions

Applications are authorized to call APIs when they are granted permissions by users/admins as part of the consent process. The list of configured permissions should include all the permissions the application needs. [Learn more about permissions and consent](#)

Add a permission Grant admin consent for Dave Ruijter

API / Permissions name	Type	Description	Admin consent requ...	Status	
Microsoft Graph (1)					
User.Read	Delegated	Sign in and read user profile	No	Granted for Dave Ruijter	
Power BI Service (1)					
Dataset.ReadWrite.All	Delegated	Read and write all datasets	No	Granted for Dave Ruijter	

Setup

Integration settings

- Allow XMLA endpoints and Analyze in Excel with on-premises datasets
Enabled for the entire organization

- Dataset Execute Queries REST API
Enabled for the entire organization

Users in the organization can query datasets by using Data Analysis Expressions (DAX) through Power BI REST APIs.



Apply to:

- The entire organization
- Specific security groups
- Except specific security groups

Apply

Cancel

Admin API settings

- Allow service principals to use read-only admin APIs
Enabled for a subset of the organization

Web apps registered in Azure Active Directory (Azure AD) will use an assigned service principal to access read-only admin APIs without a signed in user. To allow an app to use service principal authentication, its service principal must be included in an allowed security group. By including the service principal in the allowed security group, you're giving the service principal read-only access to all the information available through admin APIs (current and future). For example, user names and emails, dataset and report detailed metadata. [Learn more](#)



Apply to:

- The entire organization
- Specific security groups

PBI_Service_API_Permissions Enter security groups

Apply

Cancel

Impersonation

- Testing row-level security (RLS)

Limitations

- Datasets that are hosted in Azure Analysis Services or that have a live connection to an on-premises Azure Analysis Services model aren't supported.
- The tenant setting Dataset Execute Queries REST API, found under Integration settings, must be enabled.
- One query per API call.
- One table request per query.
- Maximum of 100,000 rows or 1,000,000 values per query (whichever is hit first). For example if you query for 5 columns, you can get back max 100,000 rows. If you query for 20 columns, you can get back max 50,000 rows (1 million divided by 20).
- Maximum of 15MB of data per query. Once 15MB is exceeded, the current row will be completed but no additional rows will be written.
- Maximum of 120 requests per user per minute. Target dataset does not impact this rate limit.
- Service Principals aren't supported for datasets with RLS per RLS limitations or with SSO enabled. To use Service Principals, make sure the admin tenant setting Allow service principals to use Power BI APIs under Developer settings is enabled.

Other notes

- [Announcing general availability of the ExecuteQueries REST API | Microsoft Power BI Blog | Microsoft Power BI](#)
- [Monitoring Power BI using REST APIs from Python — DATA GOBLINS \(data-goblins.com\)](#)

GX for Azure Synapse Analytics



Setup

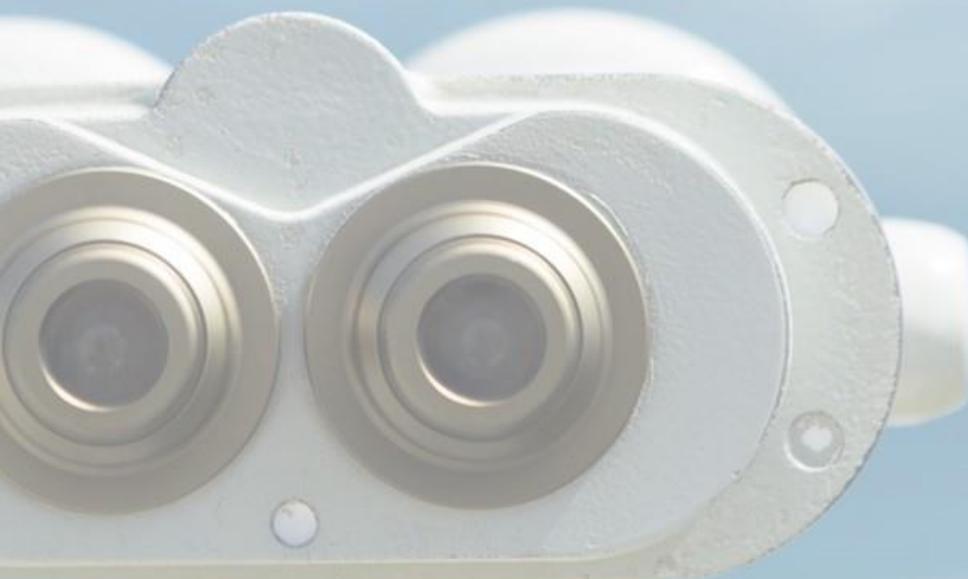
- Adding packages (e.g. great_expectations) is more complex if you have Data exfiltration protection enabled!

Take aways on great_expectations

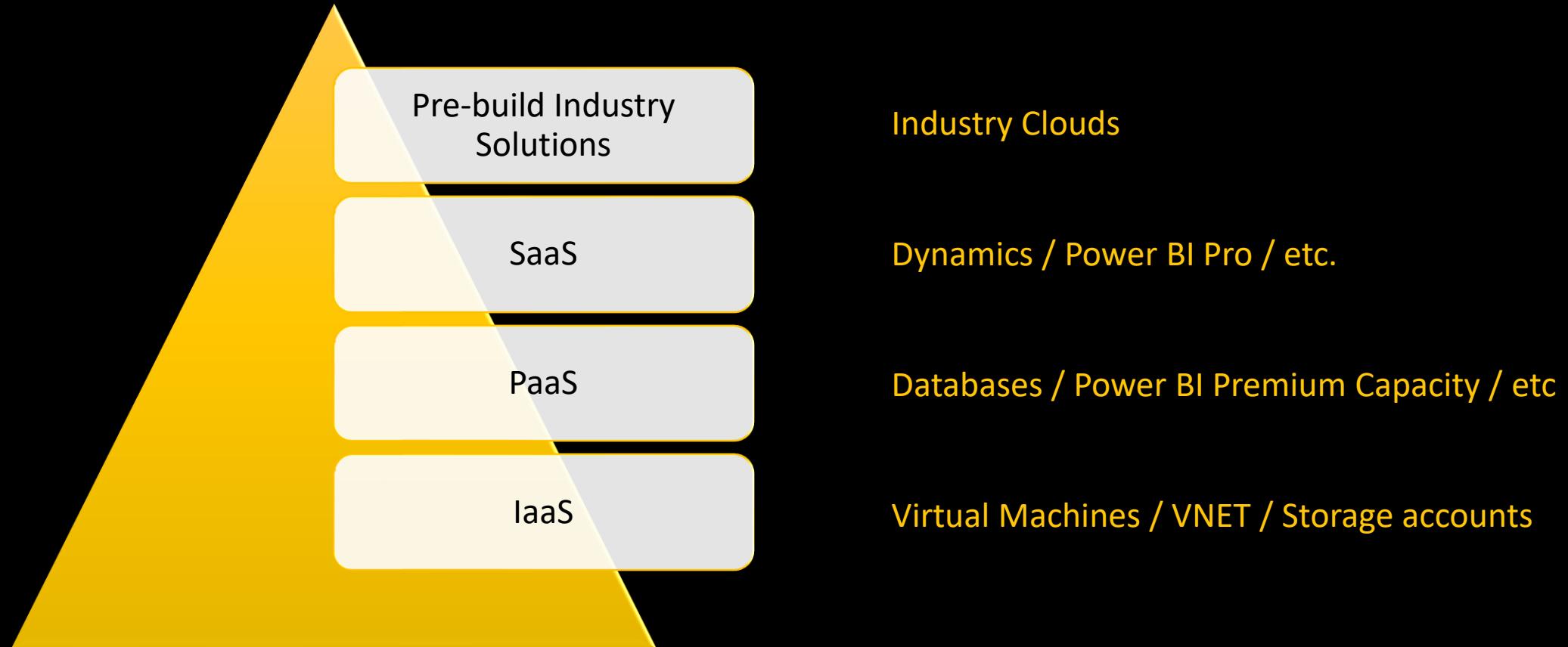
- Impressive
- Configuration nightmare
- Timesaver

Usage and cost insights

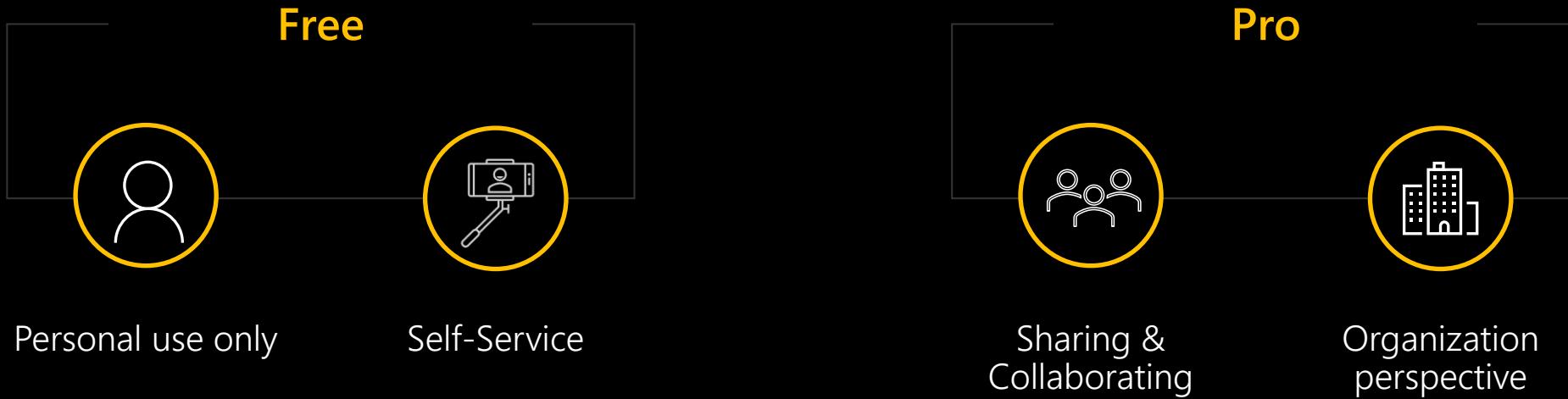
out of the box
vs
custom



Services and offering models



Licensing (per user licensing)



Shared resources in the cloud

Licensing (per user licensing)



Shared resources in the cloud

Licensing (capacity based licensing)

Power BI Premium



Flexibility to license
by capacity



Greater scale
and performance



Unifying self-service and
enterprise BI



Extending on-premises
capabilities

Reserved resources in the cloud

Take care of your capacity

Permissions



Two levels of assignment permissions

Management



Work with a consistent management experience

Workspaces



Easily assign workspaces

Capacity



Move content from shared to dedicated capacity

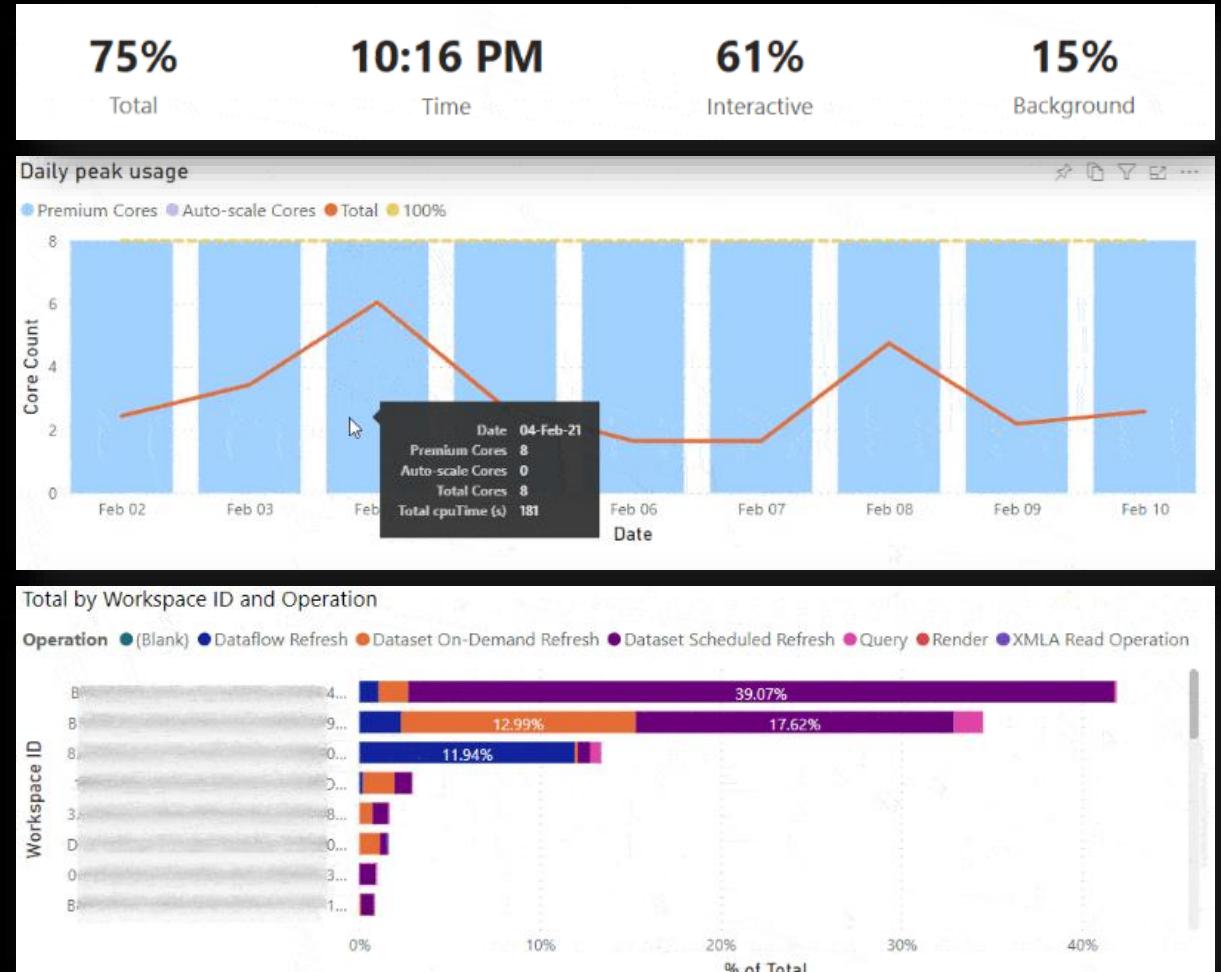
Capacity metrics app (only gen2)

Available vCores

- Available vCores at a given time

Utilization

- Per workspace
- Per refresh type for datasets & dataflows
(on demand / scheduled)
- Per operation type
(XMLA / query / rendering)



Spikes in capacity usage

Influencing factors

- Amount of datasets
- Dataset composition
- Model schema
- Peak performance
- Row-level security
- Number of visuals on screen
- Concurrent viewers
- Usage of dataflows

Spikes in capacity usage

Take aways

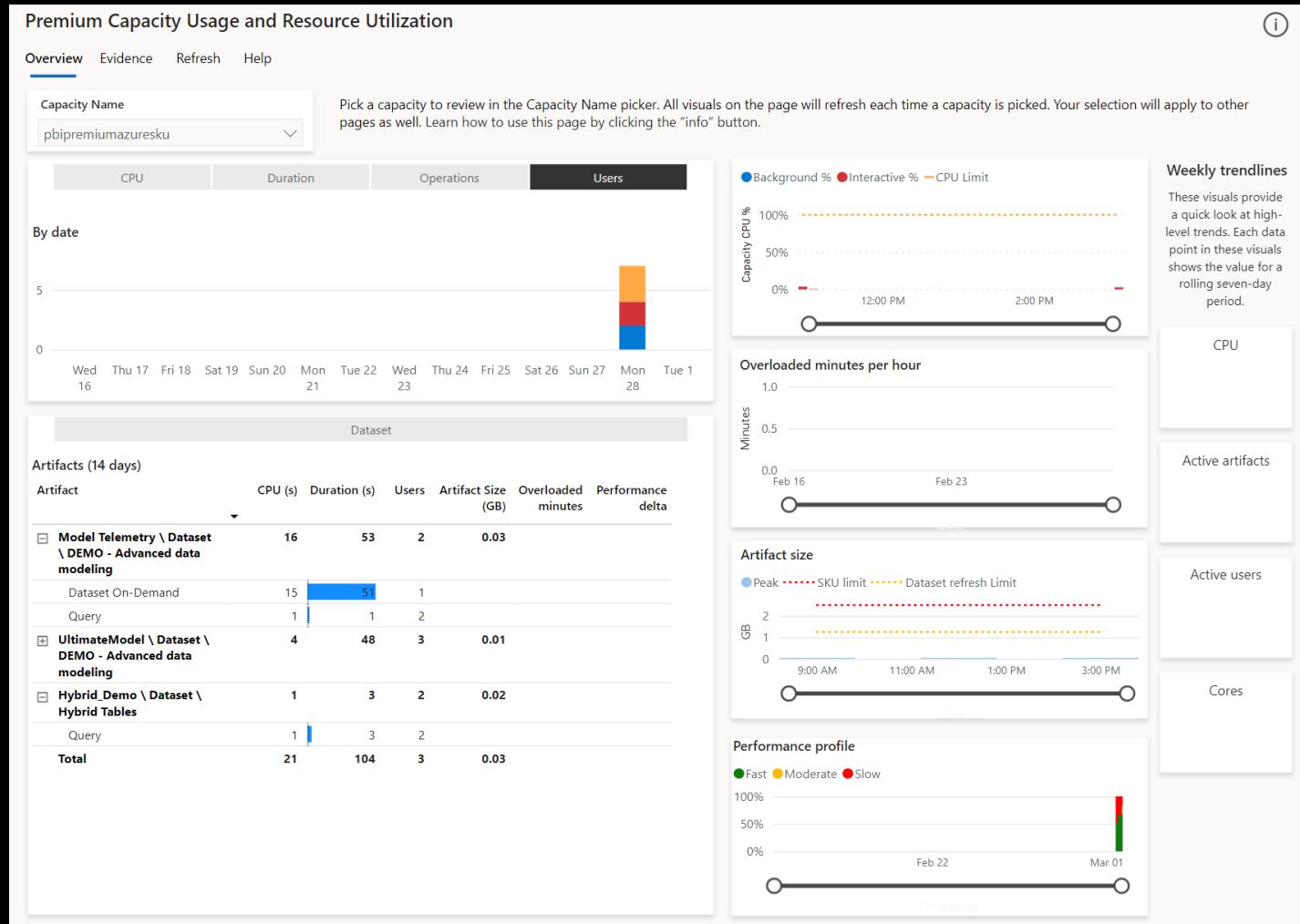
- Focus on capacity CPU & overload minutes
- One-time peaks – **Don't worry too much!**
- Continuous overload – **Investigate what's causing it!**

Spikes in capacity usage

Considerations

- **Optimization:** Limit columns on a dataset, avoid heavy operations
- **Scale-out:** isolate large contributors to a separate capacity, instead of upgrading.
- **Scale-up:**
Consider Auto-scale if peaks happen on specific days (like month end) or upgrade capacity (last resort)

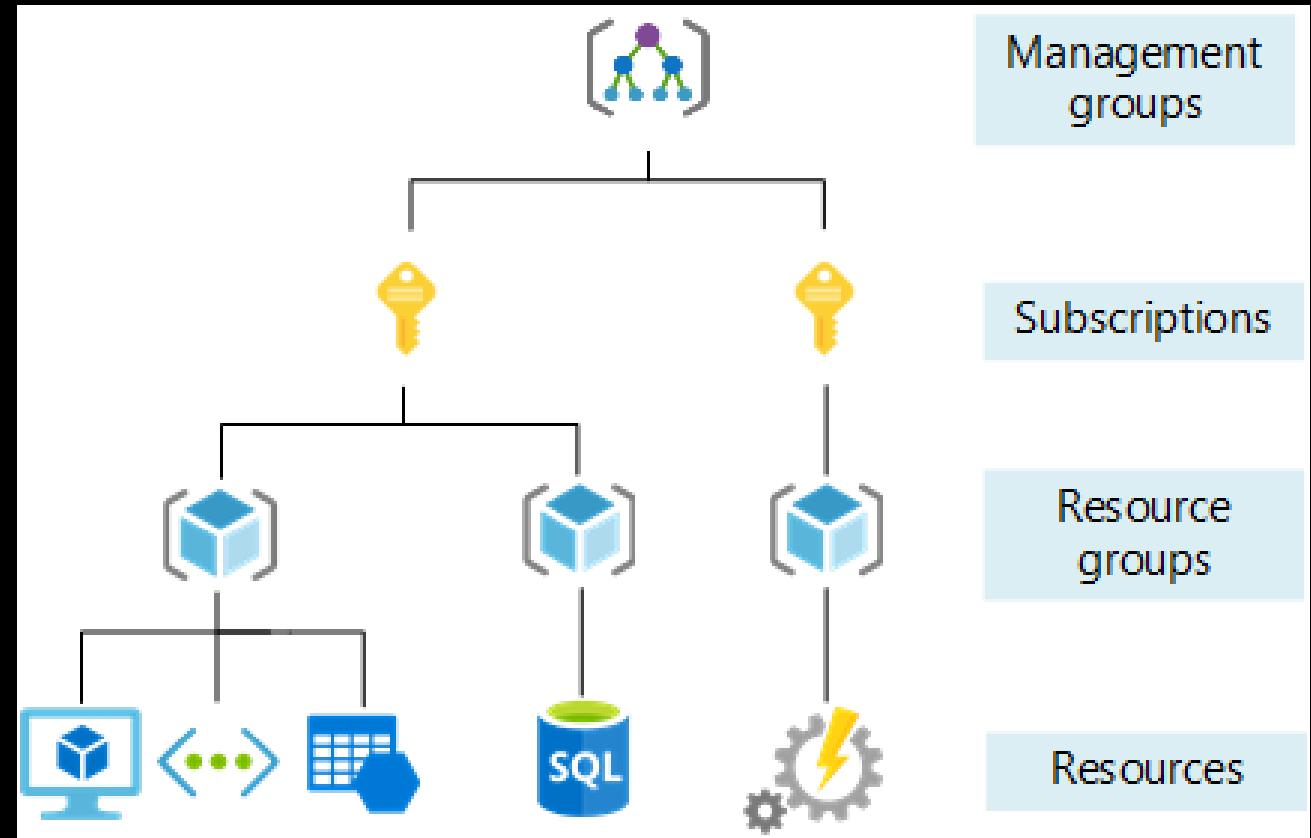
Template report to get insights



- Overview
- Evidence
- Refresh

Azure cost & consumption

- Level on various levels
 - Define budgets
 - Reserved Instances vs Pay as you Go



Azure Cost Management

- Analyze cost with the Cost Management Power BI App for Enterprise Agreements (EA)
- Create visuals and reports with the Azure Cost Management connector in Power BI Desktop
- Create and manage exported data
- Cost Details API
- Azure Consumption APIs
- Exports

Analyze cost with the Cost Management Power BI App for Enterprise Agreements (EA)

Article • 06/28/2022 • 9 minutes to read • 4 contributors

 Feedback

In this article

[Prerequisites](#)

[Installation steps](#)

[Reports available with the app](#)

[Troubleshoot problems](#)

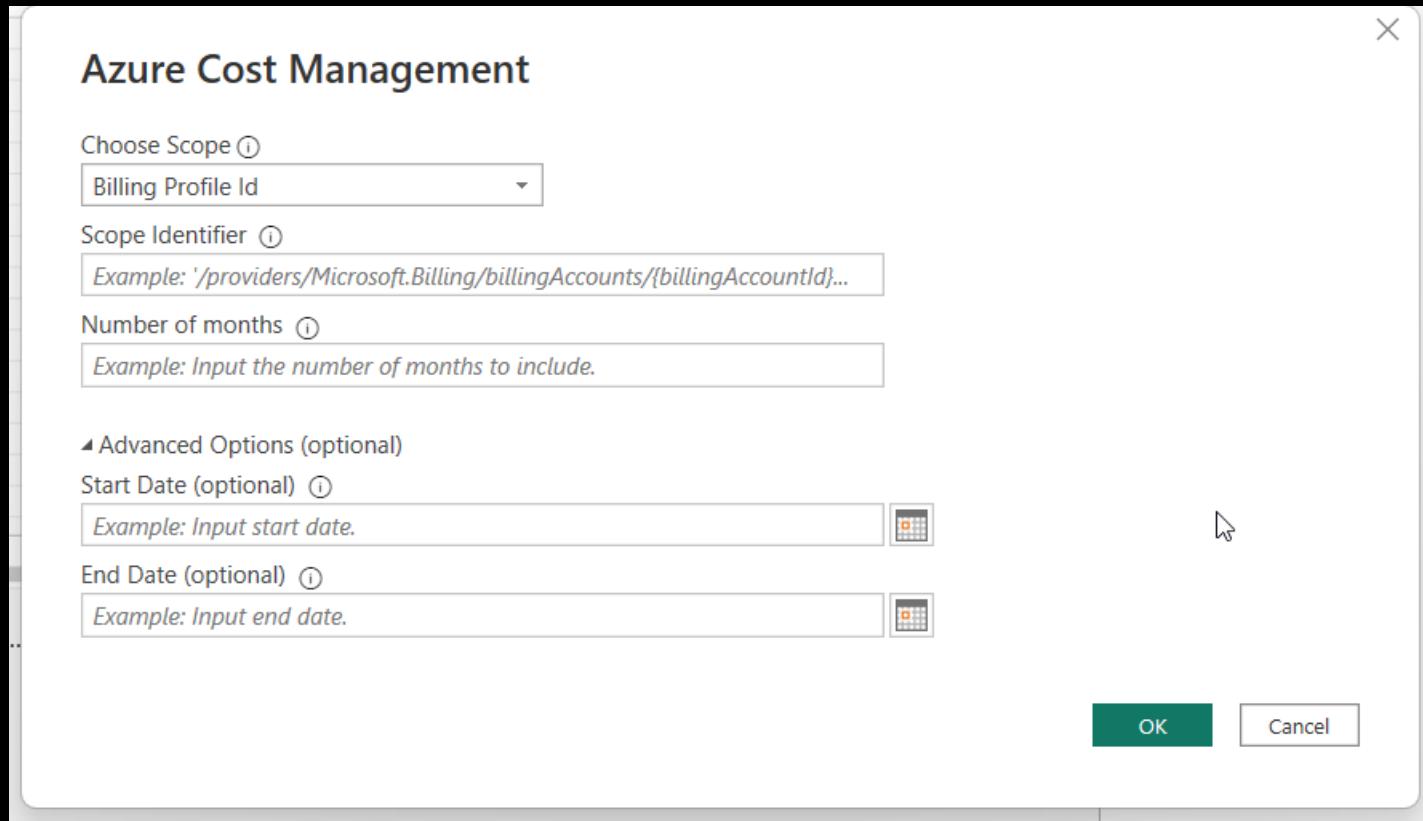
[Show 2 more](#)

This article explains how to install and use the Cost Management Power BI app. The app helps you analyze and manage your Azure costs in Power BI. You can use the app to monitor costs, usage trends, and identify cost optimization options to reduce your expenditures.

The Cost Management Power BI app currently supports only customers with an [Enterprise Agreement](#).

The app limits customizability. If you want to modify and extend the default filters, views, and visualizations to customize for your needs, use [Cost Management connector in Power BI Desktop](#) instead. With the Cost Management connector you can join additional data from other sources to create customized reports to get holistic views of your overall business cost. The connector also supports Microsoft Customer Agreements.

Azure Cost Management connector



Cost Details API – when to choose

Only available for customers with an Enterprise Agreement or Microsoft Customer Agreement. Other types TBD.

- Useful for scenarios when Exports to Azure storage aren't feasible due to security or manageability concerns.
- Useful for small cost datasets. Exports scale better than the API. The API may not be a good solution if you need to ingest many gigabytes worth of cost data month over month. A GB of cost details data is roughly 1 million rows of data.

Cost Details API – best practices

- Query at most once per day
- Cache your cost data in a queryable store to prevent repeated calls for identical data
- Chunk your calls into small date ranges to get more manageable files that you can download
- Consider placing multiple calls to child scopes
- If you're bound by rate limits at a lower scope, consider calling a higher scope to download data.

Azure Consumption APIs

- The APIs currently only support Enterprise Enrollments, Web Direct subscriptions (with a few exceptions), and CSP Azure plan subscriptions. The APIs are continually updated to support other types of Azure subscriptions.

Azure Consumption APIs

Operation Group	Description
Budgets	Provides operations to set, update, and delete budgets at a Subscription or resource group scope. Supports cost and usage budgets.
Price Sheet	Provides operations to get price sheet for Enterprise Subscriptions.
Marketplace Charges	Provides operations to get usage information for marketplace resources on subscription or Enterprise Billing accounts.
Usage Details	Provides operations to get usage information on subscription or Enterprise Billing accounts.
Reservation Details	Provides operations to get reservation detailed usage for Pay as you go and Enterprise Subscriptions.
Reservation Details Report	Provides operations to get reservation detailed usage for Pay as you go and Enterprise Subscriptions in a report format optimized for large data sizes.
Reservation Summaries	Provides operations to get reservation summary usage for Pay as you go and Enterprise Subscriptions.
Reservation Recommendations	Provides operations to get reservation recommendations for Pay as you go and Enterprise Subscriptions.
Forecasts	Provides operations to get usage forecasts for Enterprise Subscriptions.
Balances	Provides operations to get balances and summaries for Enterprise Billing Accounts.
Tags	Provides operations to get tags info for Enterprise Subscriptions.

Schedule exports

- Create using Azure Portal
 - Create using Exports API
 - Create using Azure CLI
-
- Export CSV file to Azure Storage account

Schedule exports

Home > Cost Management + Billing | Cost Management > Cost Management: sub-we-mpn-playground-01

Cost Management: sub-we-mpn-playground-01 | Exports

Subscription

Search

Add Refresh Run now Enable Disable Delete Help

Scope : **sub-we-mpn-playground-01**

Search to filter items...

\$ Overview

Access control

Diagnose and solve problems

Cost Management

\$ Cost analysis (preview)

\$ Cost analysis

\$ Cost alerts

Budgets

Advisor recommendations

Billing

Invoices

Payment methods



No exports to display

Schedule daily exports to publish your billing data to a storage account.

Learn more

Schedule export

New export



sub-we-mpn-playground-01

Exports allow you to create a recurring task that automatically exports your Cost Management data to an Azure Blob Storage on a daily, weekly, or monthly basis. The exported data is in CSV format and contains all the cost and usage information collected by Cost Management. You will incur costs for the Azure storage. [Learn more](#)

Export details

Name *

costmanagementexport *

Export type * ⓘ

Daily export of month-to-date costs ✓ *

Start date (UTC time) * ⓘ

Sun Mar 12 2023 UTC 📅 *

Storage

Use existing Create new

Subscription * ⓘ

sub-we-mpn-playground-01 ✓ *

Storage account * ⓘ

dlsweplayground01 ✓ *

Container * ⓘ

costmanagementexport *

Directory * ⓘ

costmanagementexport *

Create

New export

...



sub-we-mpn-playground-01

Exports allow you to create a recurring task that automatically exports your Cost Management data to an Azure Blob Storage on a daily, weekly, or monthly basis. The exported data is in CSV format and contains all the cost and usage information collected by Cost Management. You will incur costs for the Azure storage. [Learn more](#)

Export details

Name *

costmanagementexport *

Export type * ⓘ

Daily export of month-to-date costs ✓ *

Start date (UTC time) * ⓘ

Sun Mar 12 2023 UTC 📅 *

Export creation failed. RP Not Registered. Register destination storage account subscription with Microsoft.CostManagementExports. Please refer <https://docs.microsoft.com/en-us/rest/api/resources/providers/register> (Code: 400)



Use existing

Create new

Subscription * ⓘ

sub-we-mpn-playground-01 ✓ *

Storage account * ⓘ

dlsweplayground01 ✓ *

Container * ⓘ

costmanagementexport *

Directory * ⓘ

costmanagementexport *

Create

Combine Files

Specify the settings for each file. [Learn more](#)

Sample File:

First file

File Origin

65001: Unicode (UTF-8)

Delimiter

Comma

Data Type Detection

Based on first 200 rows

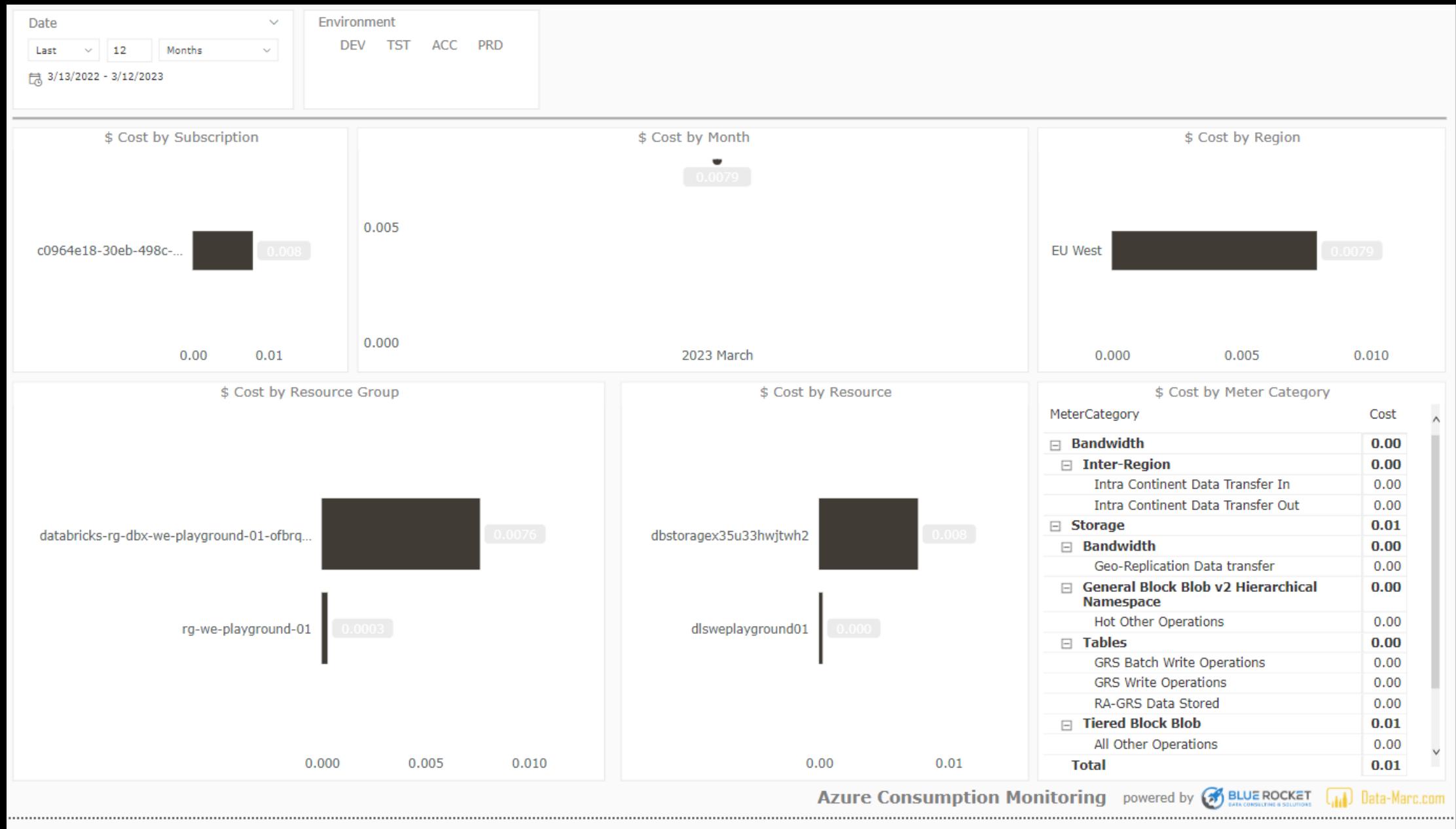


SubscriptionGuid	ResourceGroup	ResourceLocation	UsageDateTime	MeterCategory
c0964e18-30eb-498c-bb54-4ce61ba7d0c6	rg-we-playground-01	EU West	2023-03-03	Storage
c0964e18-30eb-498c-bb54-4ce61ba7d0c6	databricks-rg-dbx-we-playground-01-ofbrqbtjxqgbm	EU West	2023-03-09	Storage
c0964e18-30eb-498c-bb54-4ce61ba7d0c6	databricks-rg-dbx-we-playground-01-ofbrqbtjxqgbm	EU West	2023-03-07	Storage
c0964e18-30eb-498c-bb54-4ce61ba7d0c6	databricks-rg-dbx-we-playground-01-ofbrqbtjxqgbm	EU West	2023-03-01	Storage
c0964e18-30eb-498c-bb54-4ce61ba7d0c6	rg-we-playground-01	EU West	2023-03-01	Bandwidth
c0964e18-30eb-498c-bb54-4ce61ba7d0c6	databricks-rg-dbx-we-playground-01-ofbrqbtjxqgbm	EU West	2023-03-01	Storage
c0964e18-30eb-498c-bb54-4ce61ba7d0c6	rg-we-playground-01	EU West	2023-03-03	Storage
c0964e18-30eb-498c-bb54-4ce61ba7d0c6	rg-we-playground-01	EU West	2023-03-01	Storage
c0964e18-30eb-498c-bb54-4ce61ba7d0c6	databricks-rg-dbx-we-playground-01-ofbrqbtjxqgbm	EU West	2023-03-02	Storage
c0964e18-30eb-498c-bb54-4ce61ba7d0c6	databricks-rg-dbx-we-playground-01-ofbrqbtjxqgbm	EU West	2023-03-09	Storage
c0964e18-30eb-498c-bb54-4ce61ba7d0c6	rg-we-playground-01	EU West	2023-03-08	Storage
c0964e18-30eb-498c-bb54-4ce61ba7d0c6	rg-we-playground-01	EU West	2023-03-02	Storage
c0964e18-30eb-498c-bb54-4ce61ba7d0c6	rg-we-playground-01	EU West	2023-03-01	Bandwidth
c0964e18-30eb-498c-bb54-4ce61ba7d0c6	rg-we-playground-01	EU West	2023-03-01	Storage
c0964e18-30eb-498c-bb54-4ce61ba7d0c6	databricks-rg-dbx-we-playground-01-ofbrqbtjxqgbm	EU West	2023-03-11	Storage
c0964e18-30eb-498c-bb54-4ce61ba7d0c6	databricks-rg-dbx-we-playground-01-ofbrqbtjxqgbm	EU West	2023-03-11	Storage
c0964e18-30eb-498c-bb54-4ce61ba7d0c6	rg-we-playground-01	EU West	2023-03-02	Storage

Skip files with errors

OK

Cancel



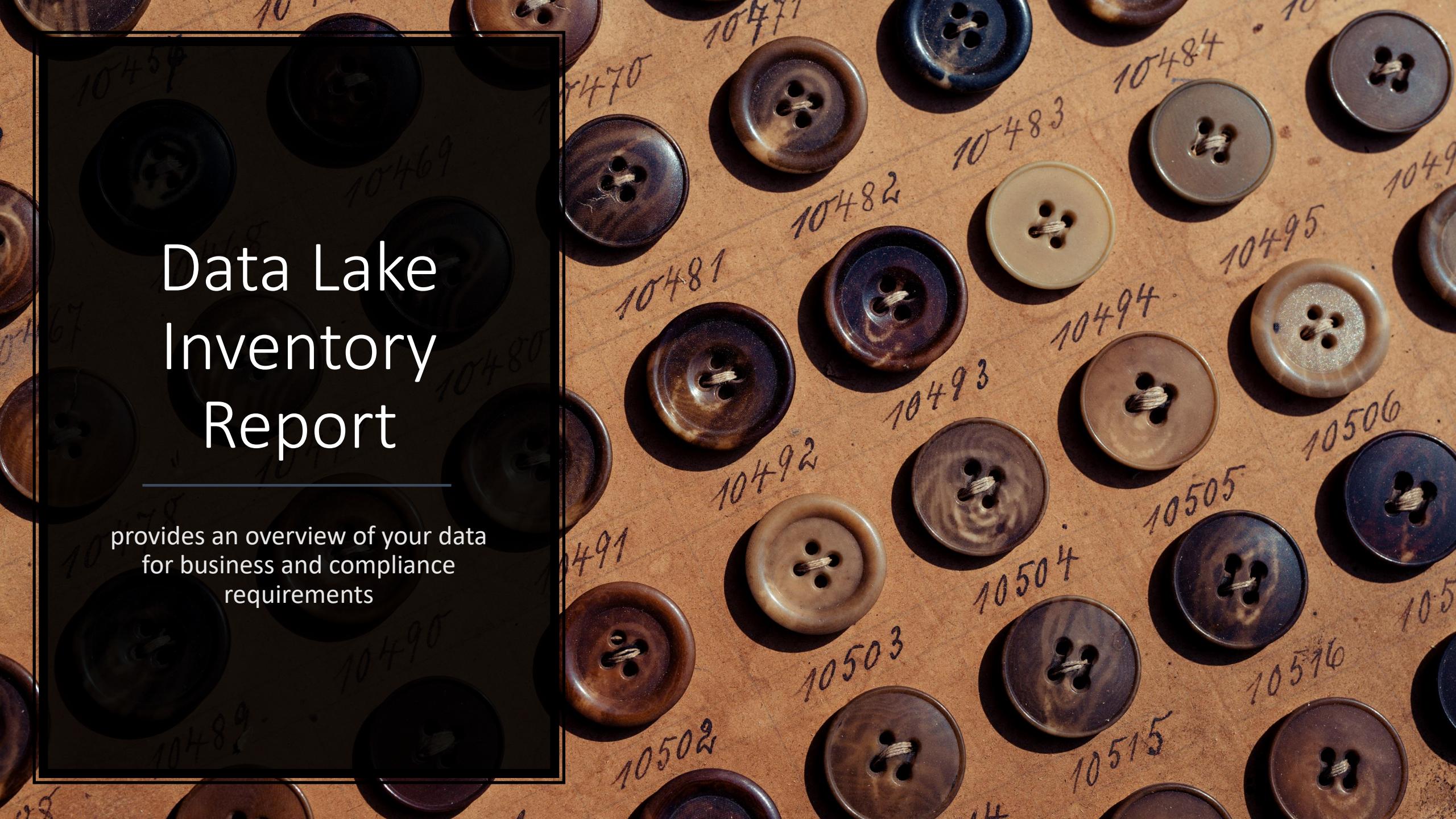
Demo

Azure Cost insights in Power BI



Data Lake Inventory Report

provides an overview of your data
for business and compliance
requirements



Get insights for each blob

- Total data size
- Encryption status
- Immutability policy
- Legal hold
- Age

Inventory features

- Big list of supported fields
- CSV or Parquet output
- Manifest file generated per report
- Azure Event Grid event generated per report

Inventory rules

Each rule within the policy has several parameters:

Parameter	Parameter type	Notes	Required?
name			
name	string	A rule name can include up to 256 case-sensitive alphanumeric characters. The name must be unique within a policy.	Yes
enabled	boolean	A flag allowing a rule to be enabled or disabled. The default value is true .	Yes
definition	JSON inventory rule definition	Each definition is made up of a rule filter set.	Yes
destination	string	The destination container where all inventory files will be generated. The destination container must already exist.	

The global **Blob inventory enabled** flag takes precedence over the *enabled* parameter in a rule.

Inventory rule definition

Parameter name	Parameter type	Notes	Required
filters	json	Filters decide whether a blob or container is part of inventory or not.	Yes
format	string	Determines the output of the inventory file. Valid values are <code>csv</code> (For CSV format) and <code>parquet</code> (For Apache Parquet format).	Yes
objectType	string	Denotes whether this is an inventory rule for blobs or containers. Valid values are <code>blob</code> and <code>container</code> .	Yes
schedule	string	Schedule on which to run this rule. Valid values are <code>daily</code> and <code>weekly</code> .	Yes
schemaFields	Json array	List of Schema fields to be part of inventory.	Yes

Inventory rule definition

Several filters are available for customizing a blob inventory report:

Filter name	Filter type	Notes	Required?
blobTypes	Array of predefined enum values	Valid values are <code>blockBlob</code> and <code>appendBlob</code> for hierarchical namespace enabled accounts, and <code>blockBlob</code> , <code>appendBlob</code> , and <code>pageBlob</code> for other accounts. This field isn't applicable for inventory on a container, (objectType: <code>container</code>).	Yes
prefixMatch	Array of up to 10 strings for prefixes to be matched.	If you don't define <code>prefixMatch</code> or provide an empty prefix, the rule applies to all blobs within the storage account. A prefix must be a container name prefix or a container name. For example, <code>container</code> , <code>container1/foo</code> .	No
excludePrefix	Array of up to 10 strings for prefixes to be excluded.	<p>Specifies the blob paths to exclude from the inventory report. An <code>excludePrefix</code> must be a container name prefix or a container name. An empty <code>excludePrefix</code> would mean that all blobs with names matching any <code>prefixMatch</code> string will be listed.</p> <p>If you want to include a certain prefix, but exclude some specific subset from it, then you could use the <code>excludePrefix</code> filter. For example, if you want to include all blobs under <code>container-a</code> except those under the folder <code>container-a/folder</code>, then <code>prefixMatch</code> should be set to <code>container-a</code> and <code>excludePrefix</code> should be set to <code>container-a/folder</code>.</p>	No
includeSnapshots	boolean	Specifies whether the inventory should include snapshots. Default is <code>false</code> . This field isn't applicable for inventory on a container, (objectType: <code>container</code>).	No
includeBlobVersions	boolean	Specifies whether the inventory should include blob versions. Default is <code>false</code> . This field isn't applicable for inventory on a container, (objectType: <code>container</code>).	No
includeDeleted	boolean	Specifies whether the inventory should include deleted blobs. Default is <code>false</code> . In accounts that have a hierarchical namespace, this filter includes folders and also includes blobs that are in a soft-deleted state.	No
		<p>Only the folders and files (blobs) that are explicitly deleted appear in reports. Child folders and files that are deleted as a result of deleting a parent folder aren't included in the report.</p>	

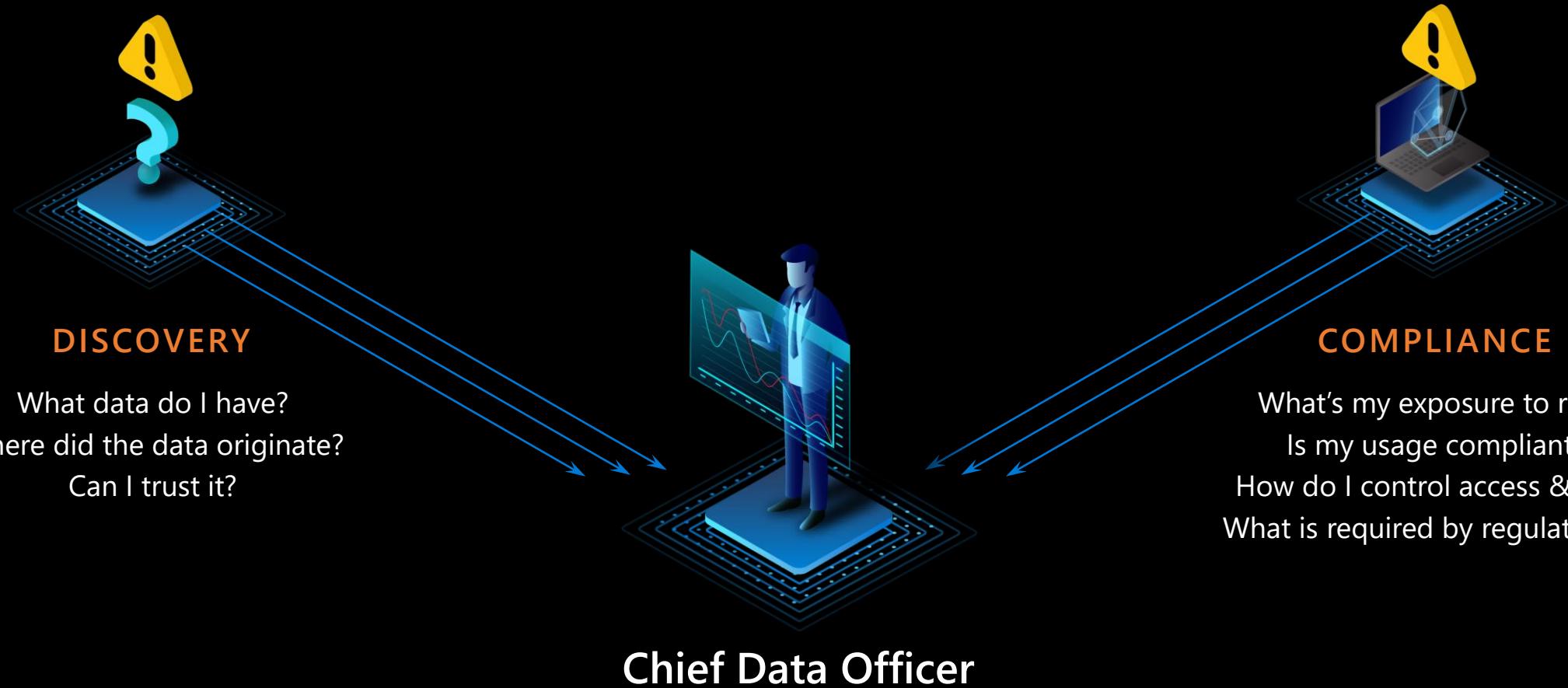
Demo



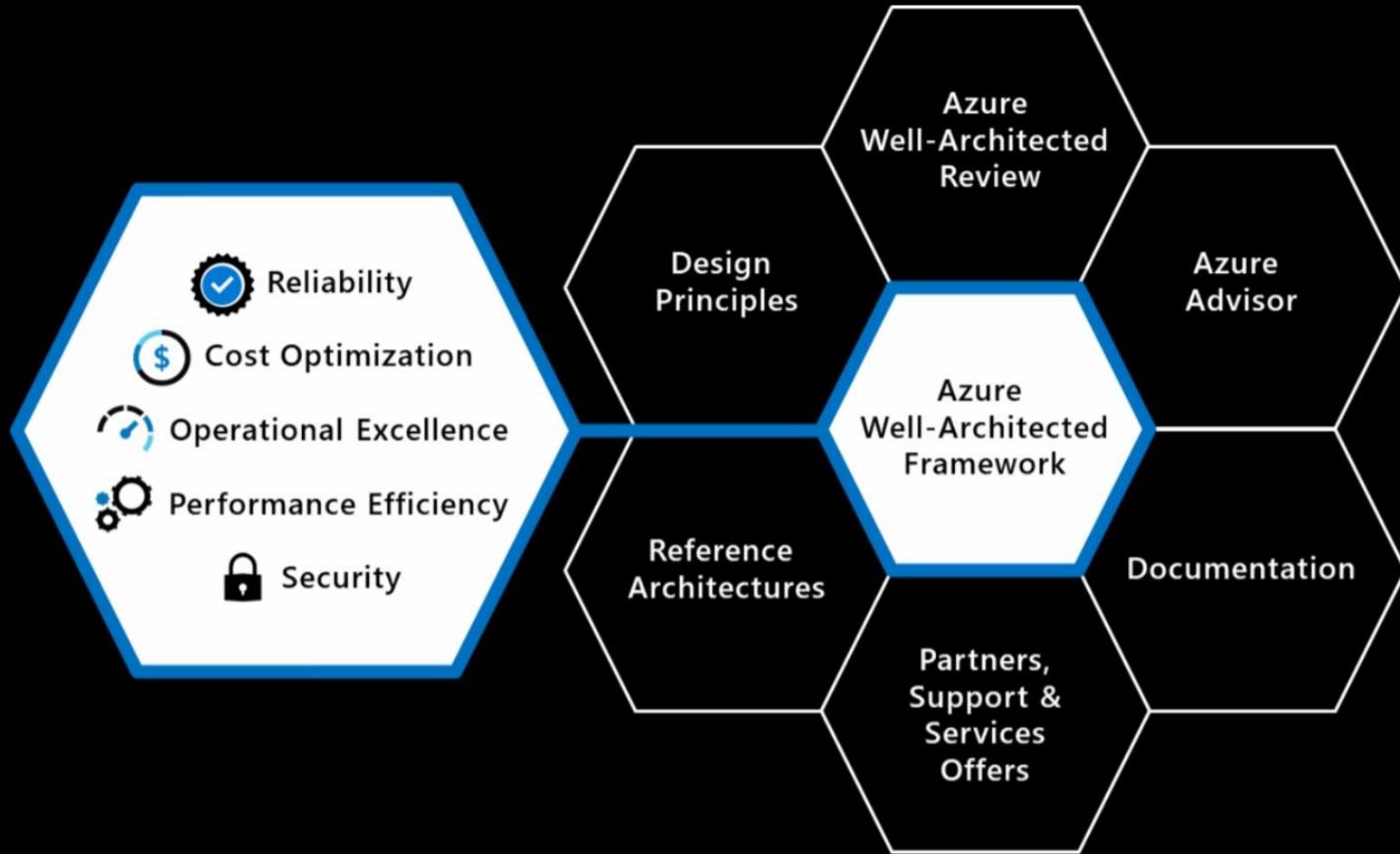
Platform Governance



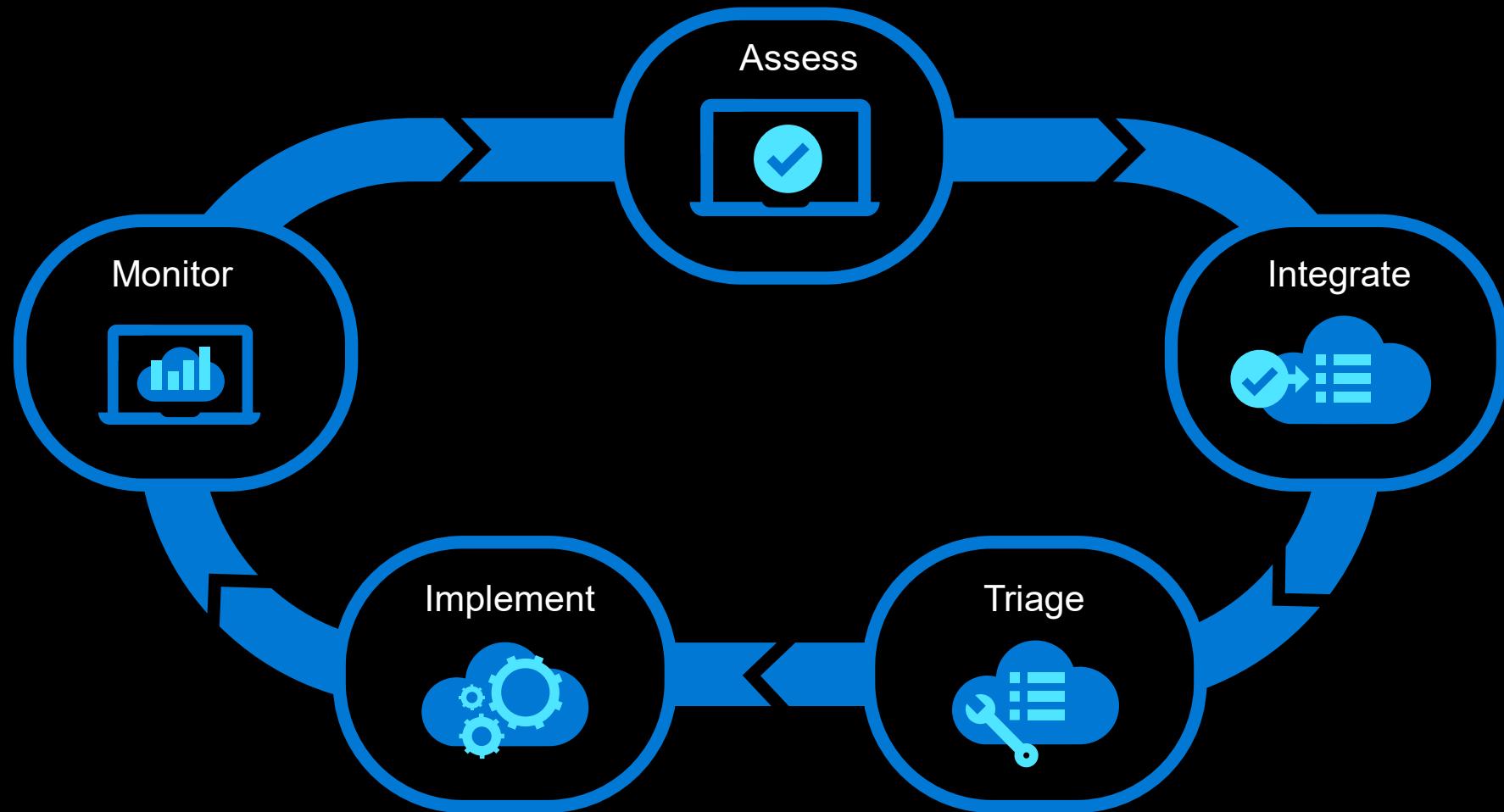
Data governance is becoming increasingly interdisciplinary



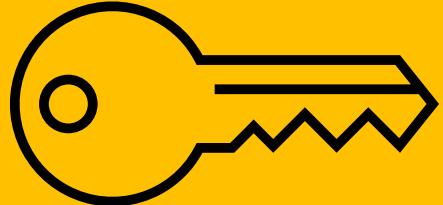
Azure WAF pillars



Following Azure Recommendations



Azure Data Estate Governance



(client) Secrets and
certificates that have
expired

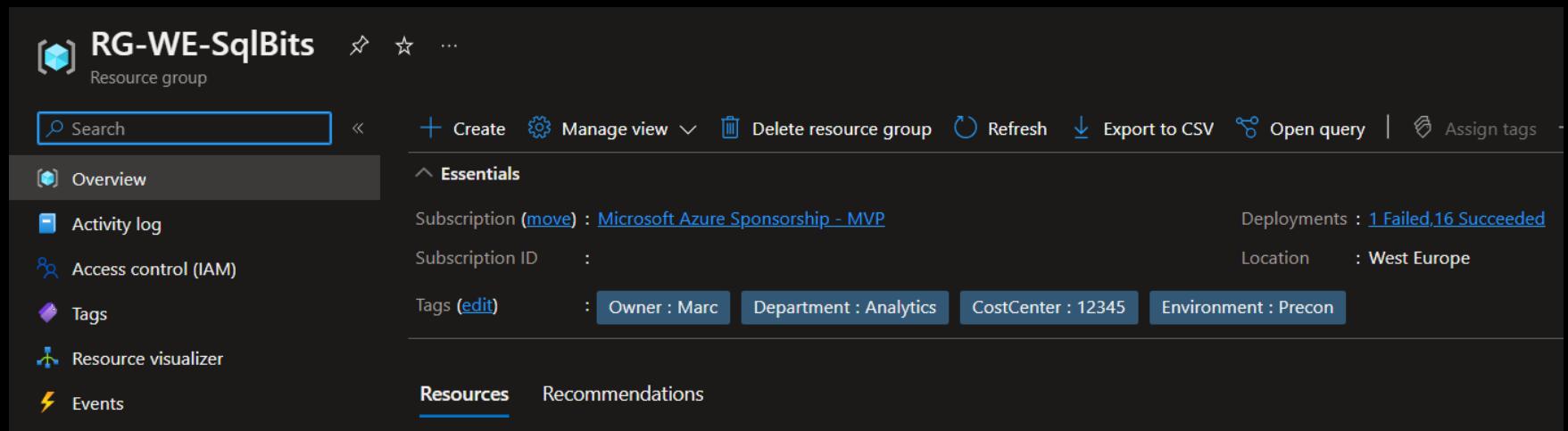


Monitor
Azure Policies

Adding Tags

Adding tags for the most crucial information, like;

- Department
- Ownership
- Cost center
- DTAP stage
- ...



Challenges for Data Consumers

- There's no central location to register data sources
- Data-consumption experiences require users to know the connection string or path.
- Data sources and documentation might live in several places.
- There's no explicit connection between the data and the experts that understand the data's context.

Challenges for Data Producers

- Annotating data sources with descriptive metadata is often a lost effort. Client applications typically ignore descriptions that are stored in the data source.
- Creating documentation for data sources can be difficult and it's an ongoing responsibility to keep documentation in sync with data sources. Users might not trust documentation that's perceived as being out of date.
- Creating and maintaining documentation for data sources is complex and time-consuming.
- Restricting access to data sources and ensuring that data consumers know how to request access is an ongoing challenge.

Challenges for security administrators

- Everything just mentioned and:
- An organization's data is constantly growing and being stored and shared in new directions. The task of discovering, protecting, and governing sensitive data is one that never ends.
- How to ensure that the organization's content is being shared with the correct people, applications, and with the correct permissions.
- Understanding the risk levels in an organization's data requires diving deep into the content, looking for keywords, RegEx patterns, and sensitive data types.
- Constantly monitor all data sources for sensitive content, as even the smallest amount of data loss can be critical to your organization.
- Ensuring that an organization continues to comply with corporate security policies is a challenging task as the content grows and changes.

Governance can many things

- Workspace creation
- Publish to web
- Exporting data
- Gateway creation / configuration
- Integration settings like ArcGIS
- Allow Power BI data to leave the geographical region
- Access and collaboration with externals

... basically, all tenant settings



Power BI Governance

- Tenant Settings
- Workspaces
 - Orphaned
 - Stale
 - Old (v1)
- Widely shared artifacts
 - Publish to web
 - Published to entire organization
- Unused artifacts
- Artifacts without sensitivity labels (Information Protection)

Endorsement

Helps with:

- Reuse of content
 - Certified datasets
 - Promoted datasets
- Indicates a certain quality of the solution
- Works for dataflows, datasets, reports, dashboard and apps
- Makes datasets discoverable

Requires:

- Mail enabled security group, who can grant certified stamp
- Mail enabled security group, who can make datasets discoverable
- Process around certification

Select a dataset to create a report

All datasets

Name	ENDORSEMENT	Owner	Workspace/App	Refreshed
Retail Analysis	Certified	Steve Myer	Retail	4 days ago
Customer Profitability	Certified	Susan Mailer	Customer	6/23/17
Vantage Global	Promoted	Lane Barnes	Vantage	3/3/18
IT Spend Analytics	Promoted	Ari Gold	IT	3 hours ago
Team Analytics	Promoted	Ana Smith	Analytics	7/12/18
Opportunity Analysis	Promoted	Lane Barnes	My Workspace	6/12/17
Retail		Lane Barnes	My Workspace	2 days ago
Procurement Analysis		Lane Barnes	My Workspace	7/22/18
Sales		Lane Barnes	My Workspace	1/24/17

OK Cancel



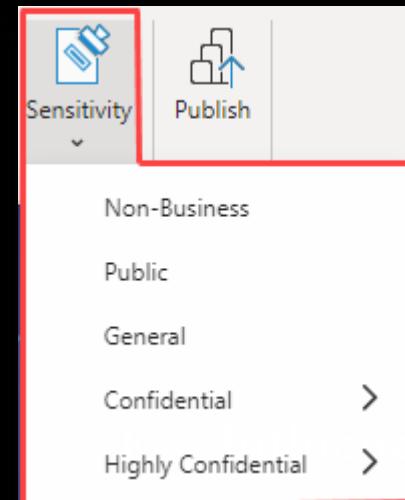
Sensitivity labeling in Power BI

Helps with:

- Data classification on type of data (like compliance of data etcetera)
- Have an idea of the sensitivity of the data (e.g., GDPR compliancy)
- Give an impression on where the data can be used / shared according to assigned policies and labels.
- Has policies assigned to which extend the content can be used.

Requires:

- Right licensing (security and compliance as part of E5)
- Policies to be setup
- (Potentially) force labeling of all content through tenant configuration



Sensitivity label

Classify the sensitivity of this report content. [Learn more](#)

Confidential for Finance

i Some sensitivity label settings, such as file encryption settings and content marking, are not enforced in Power BI. [Learn more](#)

Apply this label to the report's downstream content (preview)
[Learn more](#)

[See the downstream items in lineage view](#) ↗

Tenant settings for sensitivity labels



Allow users to apply
sensitivity labels for content

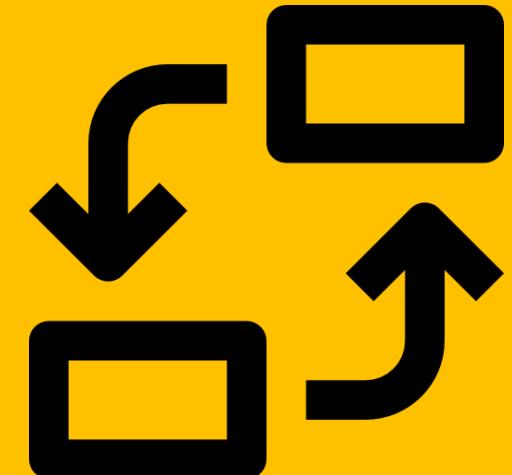


Apply sensitivity labels from
data sources to their data in
Power BI



Automatically apply
sensitivity labels to
downstream content

Configurable restrictions



Allow workspace admins to
override automatically
applied sensitivity labels



Restrict content with
protected labels from being
shared via link to entire org.

Setting up sensitivity labels

- Navigate to the compliance & security center, recently rebranded to Microsoft Purview.
- This center is only accessible for compliance admins. Power BI Service admin permissions will not suffice.

The screenshot shows the Microsoft Purview Information protection Labels page. The left sidebar lists various compliance solutions: Policies, Permissions, Trials, Catalog, App governance, Audit, Content search, Communication compliance, Data loss prevention, eDiscovery, Data lifecycle management, Microsoft 365, Exchange (legacy), Information protection (which is selected and highlighted in blue), Information barriers, Insider risk management, Records management, Privacy risk management, Subject rights requests, Settings, and More resources. The main content area has a title 'Information protection' with tabs for Overview, Labels (which is active and underlined), Label policies, and Auto-labeling. A 'New feature in preview' message states: 'Extend labeling to assets in the data map ... When you turn this on, you'll be able to apply your sensitivity labels to files and schematized data assets in Microsoft Purview Data Map and Microsoft Defender for cloud.' Below this is a 'Turn on' button and a note: 'Your organization has not turned on the ability to process content in Office online files that have encrypted sensitivity labels applied and are stored in OneDrive and SharePoint. You can turn on here, but note that additional configuration is required.' At the bottom, there is a note: 'You can now create sensitivity labels with privacy and access control settings for Teams, SharePoint sites, and Microsoft 365 Groups. To do this, you must first complete these steps to enable the feature. Sensitivity labels are used to classify email messages, documents, sites, and more. When a label is applied (automatically or by the user), the content or site is protected based on the settings you choose. For example, you can encrypt files, add content marking, and control user access to specific sites.' Below this are buttons for '+ Create a label', 'Publish label', and 'Refresh'. A table lists existing sensitivity labels:

Name	Order	Scope	Created by	Last modified
Allowed to be shared external	0 - lowest	File, Email, Meetings	Marc Lelijveld	13 Feb 2023 19:49:23
Internal Only	1 - highest	File, Email, Meetings	Marc Lelijveld	13 Feb 2023 19:49:23

Create policies

- After creating a label, you must set policies to labels.
- Labels can be setup for all Microsoft 365 content, as well as Power BI specific.
- Label enforcement can be configured for all Power BI content.

The screenshot shows the Microsoft Purview interface with the 'Policies' section selected in the sidebar. The main content area is titled 'Policy settings' and contains the following configuration options:

- Users must provide a justification to remove a label or lower its classification**
Users will need to provide a justification before removing a label or replacing it with one that has a lower-order number. You can use activity explorer to review label changes and justification text.
- Require users to apply a label to their emails and documents**
Users will be required to apply labels before they can save documents or send emails (only if these items don't already have a label applied).
(i) Support and behavior for this setting varies across apps and platforms. [Learn more about managing sensitivity labels](#)
- Require users to apply a label to their Power BI content**
Users will be required to apply labels to unlabeled content they create or edit in Power BI. [Learn more about mandatory labeling in Power BI](#)
- Provide users with a link to a custom help page**
If you created a website dedicated to helping users understand how to use labels in your org, enter the URL here. [Learn more about this help page](#)

Recap



Admin portal

Tenant settings

Usage metrics

Users

Premium Per User

Audit logs

Capacity settings

Refresh summary

Embed Codes

Organizational **visuals**

Azure connections

Workspaces

Custom branding

Protection metrics

Featured content

Number of User Dashboards

16

Count of DashboardId

Number of User Reports

91

Count of Id

Number of User Datasets

75

Count of Id

Top Users with Most Dashboards

GivenName	FamilyName	Count of DashboardId
Demo	User	12
Marc	Lelijveld	10
PBI_DeploymentPipeline		4
Odetta	Jankaitiene	3
PbRefresh		3
app-pbi-bpa		2
Dave	Ruijter	2
Dave Ruijter		2
Kirsten	de Koning	1
Power BI Monitor Extension		1

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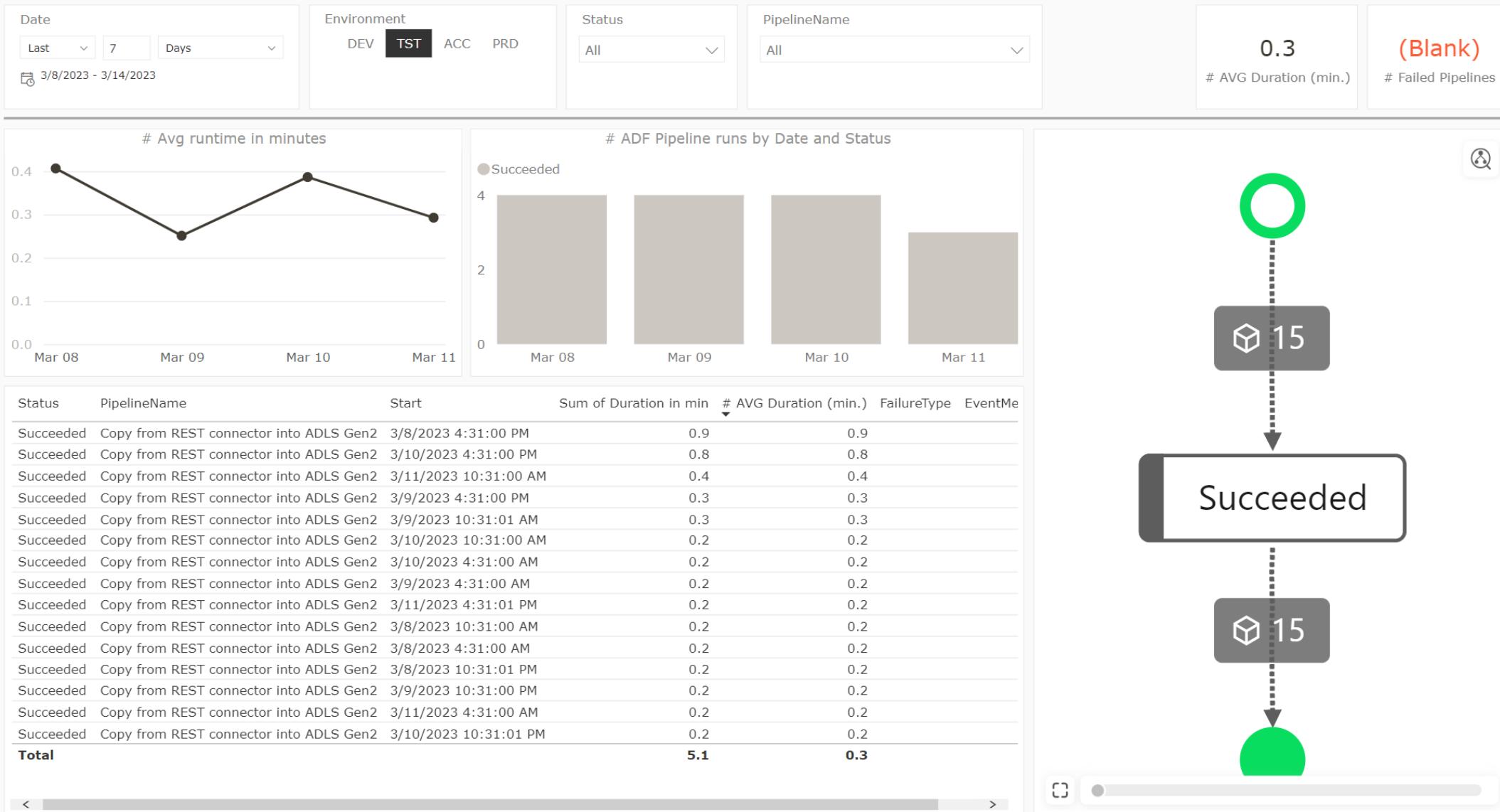
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