

#FABCONSQLCON2026

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ATLANTA MARCH 16 - 20, 2026



Unstoppable Fabric: Capacity Planning, Smart Alerting & Workload Tuning

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01



Intro

IN THIS SECTION

- ▶ Goals & Questions
- ▶ Not ideal scenario
- ▶ Better scenario

What We'll Accomplish Today

Goal: Microsoft Fabric = Unstoppable By:

- Utilizing Capacity planning + Other Tools
- Monitoring & Configuring Alerting
- Improve Data Processing

We'll use:

- Fabric Capacity Metrics app (primary)
- Fabric Activator
- Apply Spark/Warehouse best practices
- API to read CU usage and throttling

So Fabric stays fast, predictable, and cost-efficient.

Business Case: Real-World Capacity Challenge

Business goes Cloud



Let's use Fabric!



Let's Try Trial



Let's buy F2
to save money



Let's buy F64
to flourish



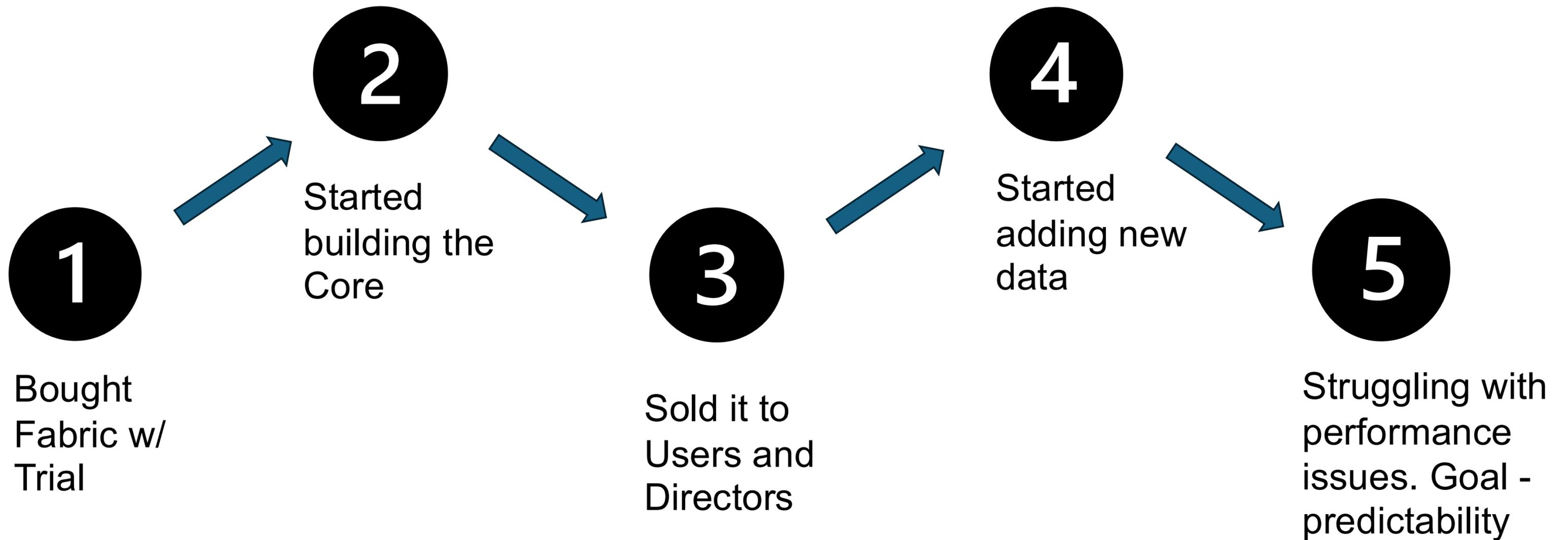
What to do?

Key Questions We'll Answer

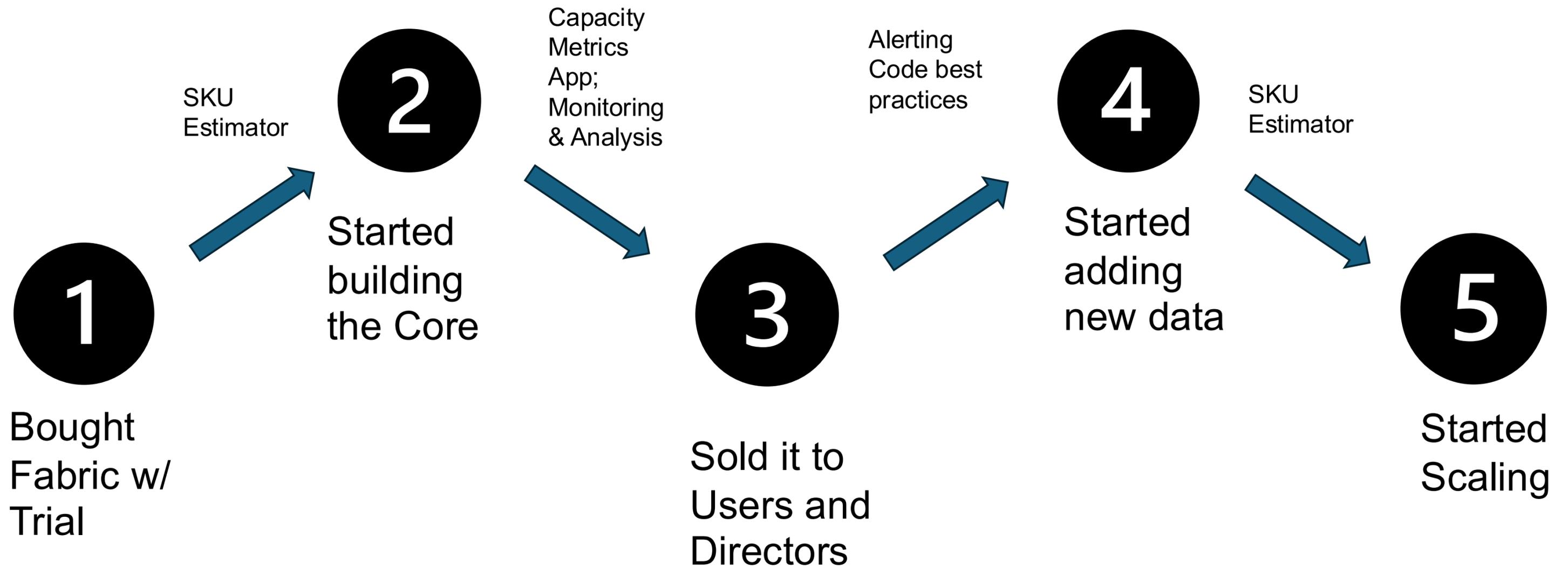
By the end of this session, you'll be able to answer:

- 1** How to understand the current workload in Fabric?
- 2** How to understand the future state of the workload?
- 3** Which tools, when, and how to use in Fabric to measure and manage a Workflow?
- 4** What tech strategies to implement to maximize the ROI from Fabric?

When Things Go Wrong



A Better Way



02



Planning for Success

IN THIS SECTION

- ▶ SKU Estimator
- ▶ Fabric Pricing

Choosing the Right SKU: SKU Estimator

Microsoft Fabric SKU Estimator (preview)

⚠ This preview of the Microsoft Fabric SKU Estimator is made available under Microsoft's [Terms of use](#). Estimates generated may not be accurate.

Tell us about your data and we'll generate a SKU recommendation based on your capacity requirements.

Data Information [Reset](#)

Total size of the data when compressed (GiB) ⓘ

Number of daily batch cycles ⓘ

Number of tables across all data sources ⓘ

Fabric usage

Select the workloads and features that you plan to use in Fabric. Some may require additional information.

Data Factory ⓘ Spark Jobs ⓘ

Data Warehouse ⓘ Ad-Hoc SQL Analytics ⓘ

Data Science ⓘ

Estimation
Estimated Viable SKU
F4

Usage Breakdown:

- Data Factory (3%)
- Spark Jobs (12%)
- Data warehouse (12%)
- Power BI (25%)
- Activator (3%)
- OneLake Operations (1%)
- Unused (43%)

Storage

- OneLake: 180 Gb

Licenses

- Power BI Pro: 12

Was the SKU Estimations helpful to you?
[Share feedback](#)

[Ask Microsoft](#)

1. Helps to clarify the right things in advance
2. Pretty accurate

Link: <https://www.microsoft.com/en-us/microsoft-fabric/capacity-estimator>

Understanding Fabric Pricing

Region: Currency: Display pricing by:

SKU	Capacity unit (CU)	Pay-as-you-go*	Reservation
F2	2	\$262.80/month	\$156.334/month ~41% savings
F4	4	\$525.60/month	\$312.667/month ~41% savings
F8	8	\$1,051.20/month	\$625.334/month ~41% savings
F16	16	\$2,102.40/month	\$1,250.667/month ~41% savings
F32	32	\$4,204.80/month	\$2,501.334/month ~41% savings
F64	64	\$8,409.60/month	\$5,002.667/month ~41% savings
F128	128	\$16,819.20/month	\$10,005.334/month ~41% savings

Link: <https://azure.microsoft.com/en-us/pricing/details/microsoft-fabric/>

03



Capacity Model

IN THIS SECTION

- ▶ Capacity
- ▶ Capacity states

Core Concept: What 'Capacity' Really Means



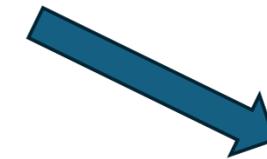
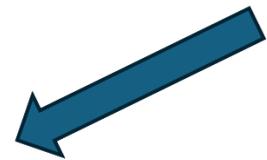
workload



Goal: Max Utilization & Availability



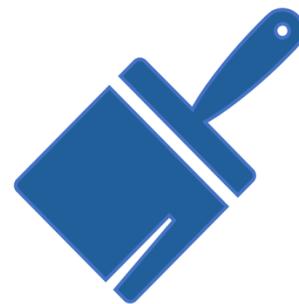
Capacity



1 Bursting

2 Smoothing

3 Throttling



Capacity States Explained

0 Suspended

1 Healthy

2 At Risk of Throttling

3 Interactive Rejection

4 Background Rejection

04

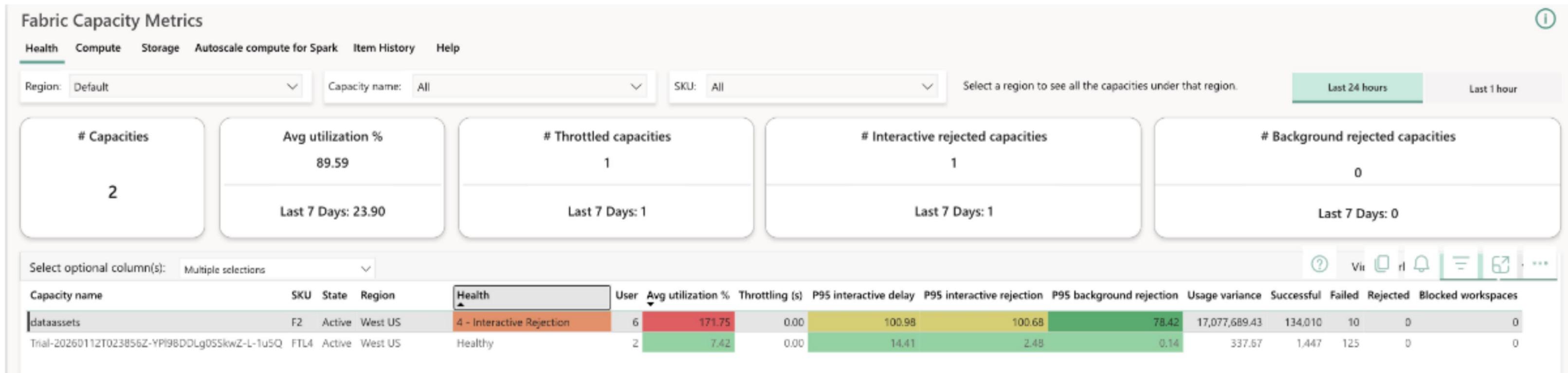


Capacity Metrics App

IN THIS SECTION

- ▶ Capacity Metrics App
- ▶ Dynamics of Capacity Consumption
- ▶ Throttling

Capacity Metrics App - UI



Configuration Features

Installation:

Power BI apps

Install apps that provide actionable insights and drive business results

All apps Organizational apps Template apps

Search: fab

- Fabric Chargeback ... (Microsoft, 2 reviews)
- Microsoft Fabric Re... (Microsoft Corporation)
- SAP Business One ... (Zap BI)
- Fabric Power BI Co... (iTalent Digital)
- Dynamics 365 Fina... (Zap BI)
- Microsoft Fabric Ca... (Microsoft, 66 reviews)

Microsoft Fabric Ca...
Fabric capacity admins can gain visibility into the resources utilized by their Fabric items

Show endorsed apps only

Configuration Later:

Power BI Apps

Search

Apps

Apps are collections of dashboards and reports in one easy-to-find place.

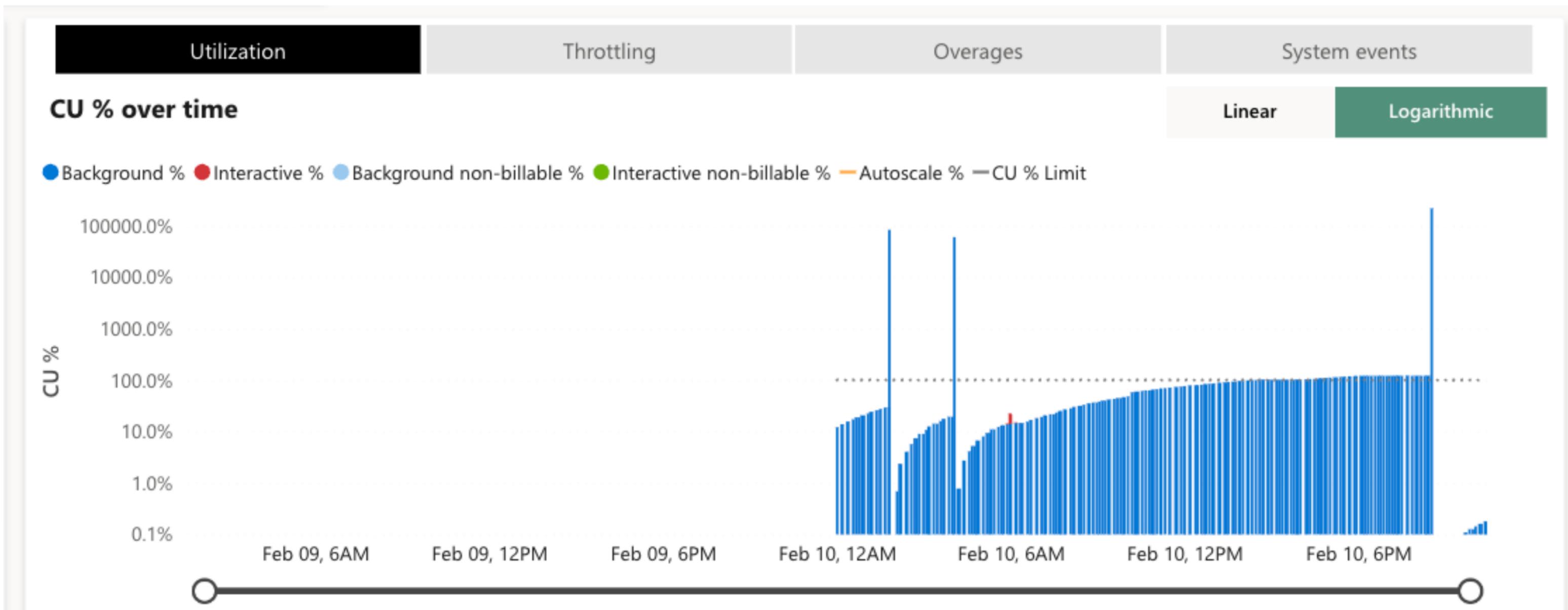
Name	Owner	Updated
Microsoft Fabric Capacity Metrics	Iurii Iurchenko	1/11/2026, 5:55:30 PM
Microsoft Fabric Chargeback Reporting		/11/2026, 6:01:43 PM
Microsoft Fabric Release Plan		/11/2026, 6:02:32 PM

Settings

UTC_offset *

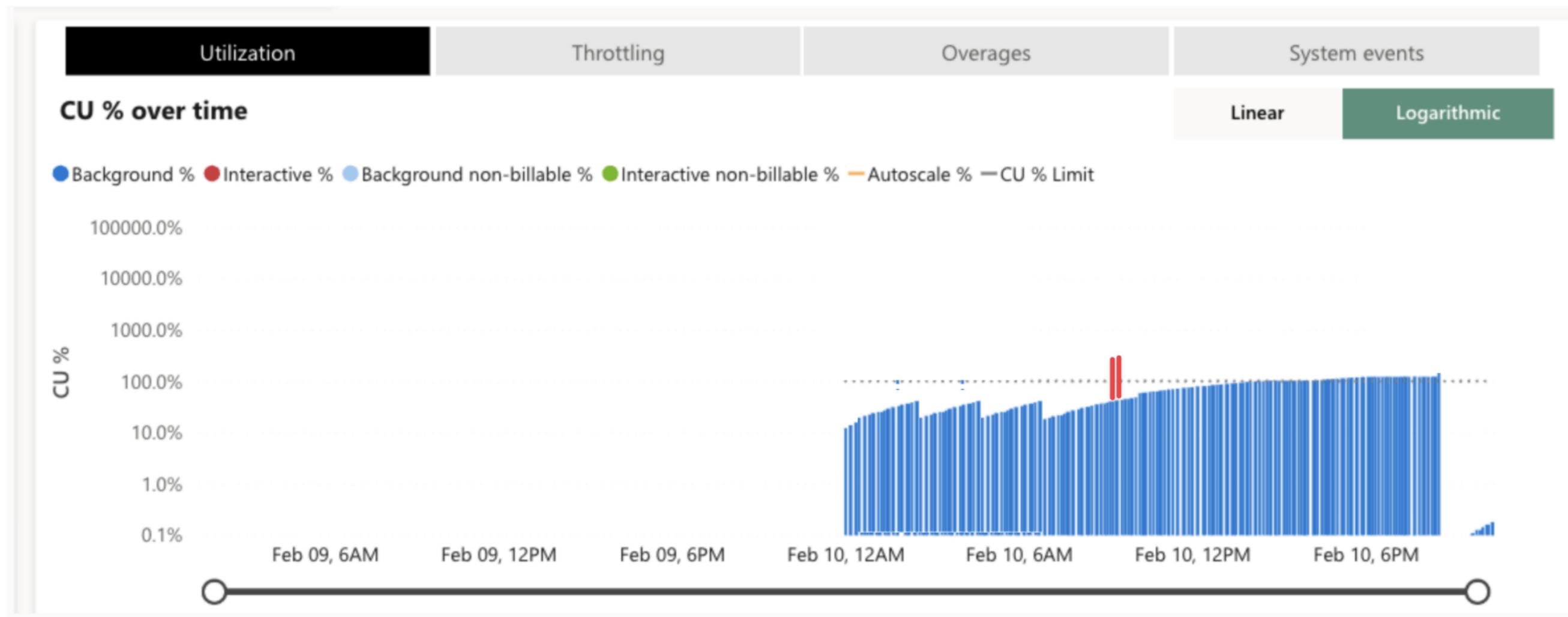
Numerical values ranging from 14 to -12. To signify a Half hour timezone, use .5. For example, for India's standard time enter 5.5.

Example 1. Capacity – Incremental Degradation



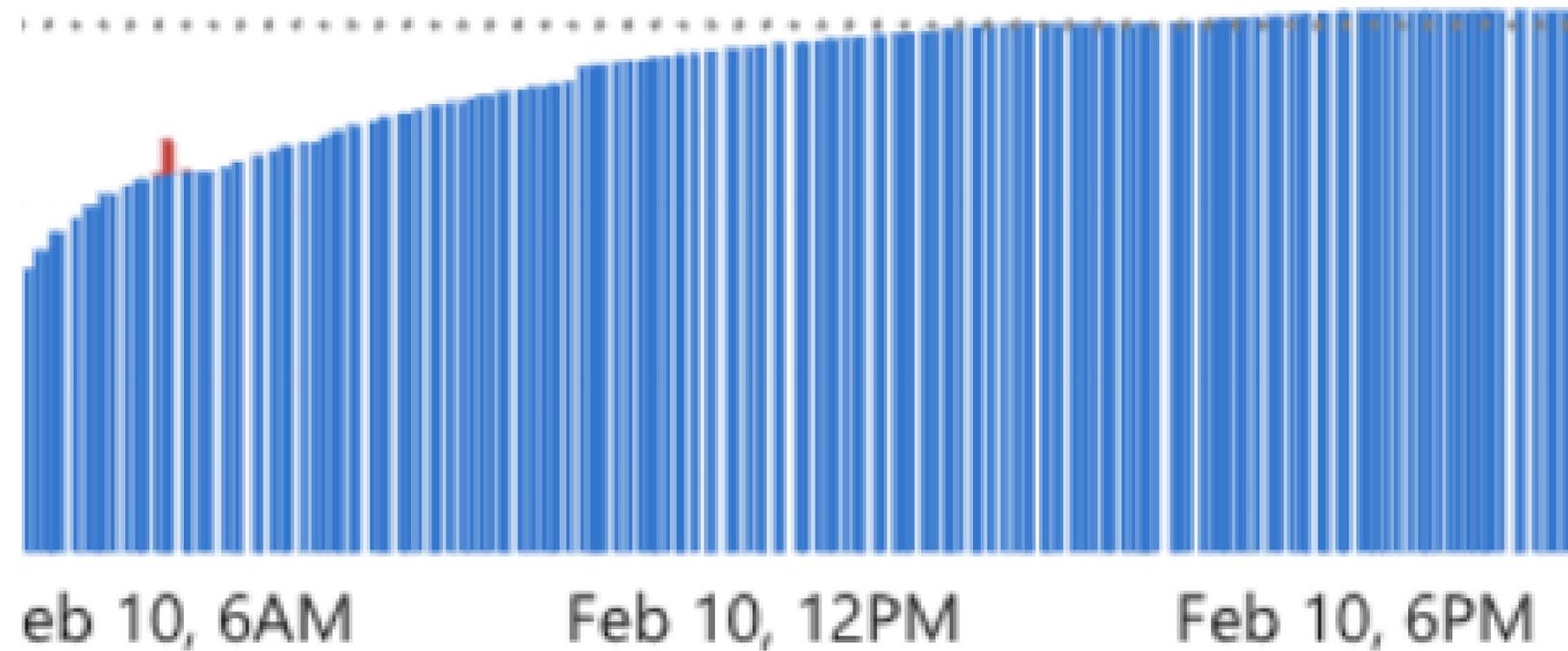
Example 2. Stability, Spike, Throttling

- 1) Average utilization is ~85-90%
- 2) Spike due to high load
- 3) Accumulated debt
- 4) Utilization = Current Utilization + Smoothed Debt



What We Need to Remember?

- Current Utilization = Real Current Utilization + Accumulated Debt



Disaster – How It Looks Like?

Fabric Capacity Metrics

Health Compute Storage Autoscale compute for Spark Item History Help

Region: Default Capacity name: All SKU: All Select a region to see all the capacities under that region. Last 24 hours Last 1 hour

Capacities: 2

Avg utilization %: 89.59
Last 7 Days: 23.90

Throttled capacities: 1
Last 7 Days: 1

Interactive rejected capacities: 1
Last 7 Days: 1

Background rejected capacities: 0
Last 7 Days: 0

Select optional column(s): Multiple selections

Capacity name	SKU	State	Region	Health	User	Avg utilization %	Throttling (s)	P95 interactive delay	P95 interactive rejection	P95 background rejection	Usage variance	Successful	Failed	Rejected	Blocked workspaces
dataassets	F2	Active	West US	4 - Interactive Rejection	6	171.75	0.00	100.98	100.68	78.42	17,077,689.43	134,010	10	0	0
Trial-20260112T023856Z-YPI98DDLg0SSkwZ-L-1u5Q	FTL4	Active	West US	Healthy	2	7.42	0.00	14.41	2.48	0.14	337.67	1,447	125	0	0

New Notebook

Unable to create the Notebook because your organization's Fabric compute capacity has exceeded its limits. Try again later.

Was this error message helpful? Yes No

Name *
test

Location *
CoreData

Create Cancel

05



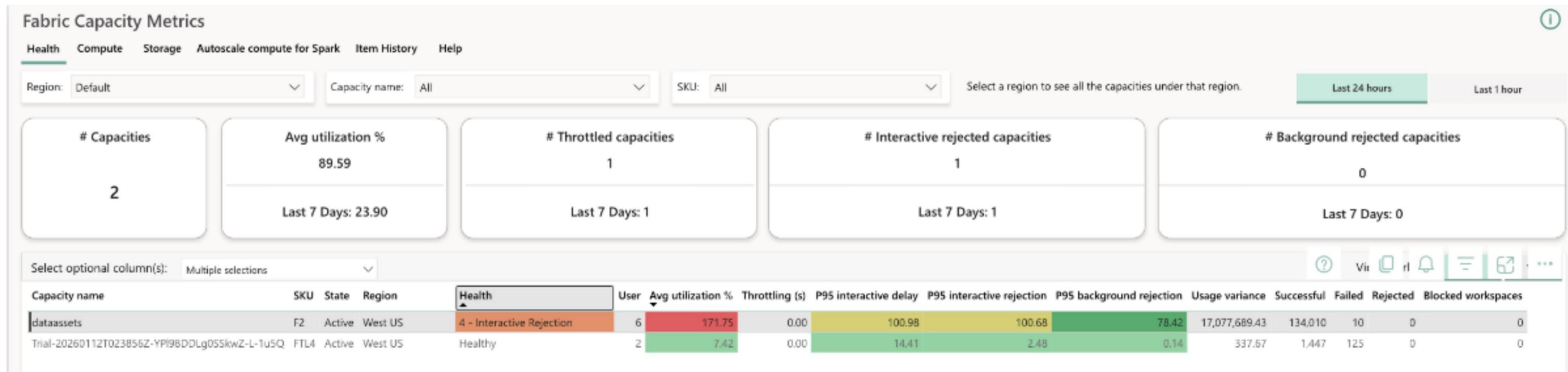
What to Do?

IN THIS SECTION

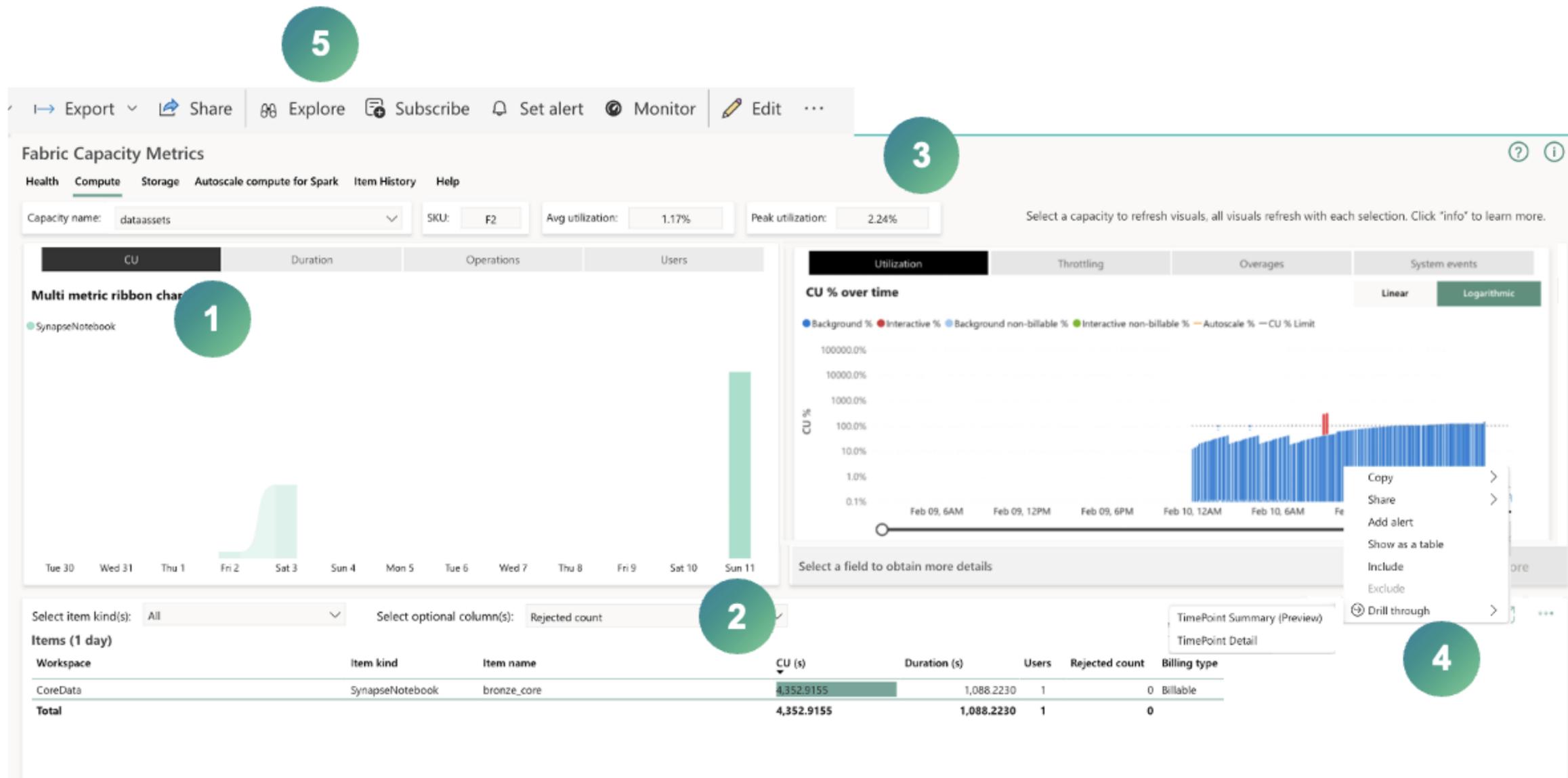
- ▶ Identification
- ▶ Root cause analysis
- ▶ Short- and long-term actions

Step 1. Identification

1. Alert about Capacity Utilization
2. Overall cause - Slide "Health"
3. Compute.Utilization > 100% and Compute.Throttling > 100%
4. Fabric Activator Alert



Step 2. Root Cause Analysis



STEP-BY-STEP

- 1 Compute -> Check CU
- 2 Select a Day
- 3 Check peak utilization
- 4 Drill through - Details
- 5 Explore for Details in PBI

Step 3. Root Cause Analysis

Fabric Capacity Metrics | Timepoint Detail

Start: 2/27/2026 12:23:00 AM
End: 2/27/2026 12:23:30 AM

CU %

0 Interactive operations | 3031 Background operations | F2 SKU | 60 CU (s)

Interactive operations for time range

Workspace	Item kind	Item name	Operation	Start	End	Status	User	Duration (s)	Total CU (s)	Timepoint CU (s)	Throttling (s)	% of Base capacity	Billing type

Background operations for time range

Workspace	Item kind	Item name	Operation	Start	End	Status	User	Duration (s)	Total CU (s)	Timepoint CU (s)	Throttling (s)	% of Base capacity	Billing type
FabricAI	Synapse...	ai_basics	Notebook Run	2/26/2026 6:07:19 PM	2/26/2026 6:27:53 PM	Stopped	y@dataassets.net	1,234	4,939.366	3,704.2975	0	6173.83%	Billable
FabricPulse	Synapse...	911_GetAllTables	Notebook Pipeline Ru	2/26/2026 7:00:28 PM	2/26/2026 7:00:54 PM	Success	y@dataassets.net	26	107.6180	84.2260	0	140.38%	Billable
FabricAI	Synapse...	ai_basics	Notebook Run	2/26/2026 6:06:16 PM	2/26/2026 6:06:44 PM	Stopped	y@dataassets.net	28	112.1825	83.1241	0	138.54%	Billable
CoreData	Activator	Activator 2026-02-10 0...	Event Ingestion	2/26/2026 6:07:06 PM	2/26/2026 6:07:09 PM	Success	y@dataassets.net	3	55.7600	48.9861	0	81.64%	Billable
CoreData	Activator	Activator 2026-02-10 0...	Event Listener	2/27/2026 12:00:00 AM	2/27/2026 12:10:00 AM	Success	<euui>y@dataassets.net</...>	1,200	26.6400	26.6400	0	44.40%	Billable
CoreData	Activator	Activator 2026-02-10 0...	Event Listener	2/26/2026 11:50:00 PM	2/27/2026 12:00:00 AM	Success	<euui>y@dataassets.net</...>	1,200	26.6400	26.5845	0	44.31%	Billable
CoreData	Activator	Activator 2026-02-10 0...	Event Listener	2/26/2026 11:40:00 PM	2/26/2026 11:50:00 PM	Success	<euui>y@dataassets.net</...>	1,200	26.6400	26.3995	0	44.00%	Billable
CoreData	Activator	Activator 2026-02-10 0...	Event Listener	2/26/2026 11:30:00 PM	2/26/2026 11:40:00 PM	Success	<euui>y@dataassets.net</...>	1,200	26.6400	26.2145	0	43.69%	Billable
CoreData	Activator	Activator 2026-02-10 0...	Event Listener	2/26/2026 11:20:00 PM	2/26/2026 11:30:00 PM	Success	<euui>y@dataassets.net</...>	1,200	26.6400	26.0295	0	43.38%	Billable
CoreData	Activator	Activator 2026-02-10 0...	Event Listener	2/26/2026 11:10:00 PM	2/26/2026 11:20:00 PM	Success	<euui>y@dataassets.net</...>	1,200	26.6400	25.8445	0	43.07%	Billable
Total								48,451	6,454.6525	4,993.1111	0	8321.85%	

Burndown table for timerange

Experience	Add %	Burndown %	Cumulative %	Minutes to burndown
DI	0.00%	0.00%	0.00%	0.00
DMS	0.00%	0.00%	0.00%	0.00
lake	0.00%	0.00%	0.00%	0.00
OneRiver	0.00%	0.00%	0.00%	0.00
Reflex	0.00%	0.00%	0.00%	0.00
SparkCore	0.00%	0.00%	0.00%	0.00
Total	0.00%	0.00%	0.00%	0.00

Overages

10 mins | 60 mins | 24 hrs

Immediate Actions: What to Do Right Now

	Start & Stop Capacity	Resize Capacity	Turn Off Heavy Processes
Pros	<ul style="list-style-type: none">- No accumulated debt	<ul style="list-style-type: none">- Faster relief- No turn-offs	<ul style="list-style-type: none">- No billing
Cons	<ul style="list-style-type: none">- Additional \$	<ul style="list-style-type: none">- Quota request- Additional \$	<ul style="list-style-type: none">- Slow relief

Long-term Actions - Data Pipelines Optimization

- Heavy Pipeline: Capacity Upscale -> Run -> Downscale
- Loading Type: Full Reload -> Incremental
- High Concurrency Mode for Development

Long-term Actions – Capacity Separation

Before:

One F32 capacity for Users, Critical Processes, and the other processes

After:

F16 for Critical Processes, F8 for Users, F8 for the other processes

06

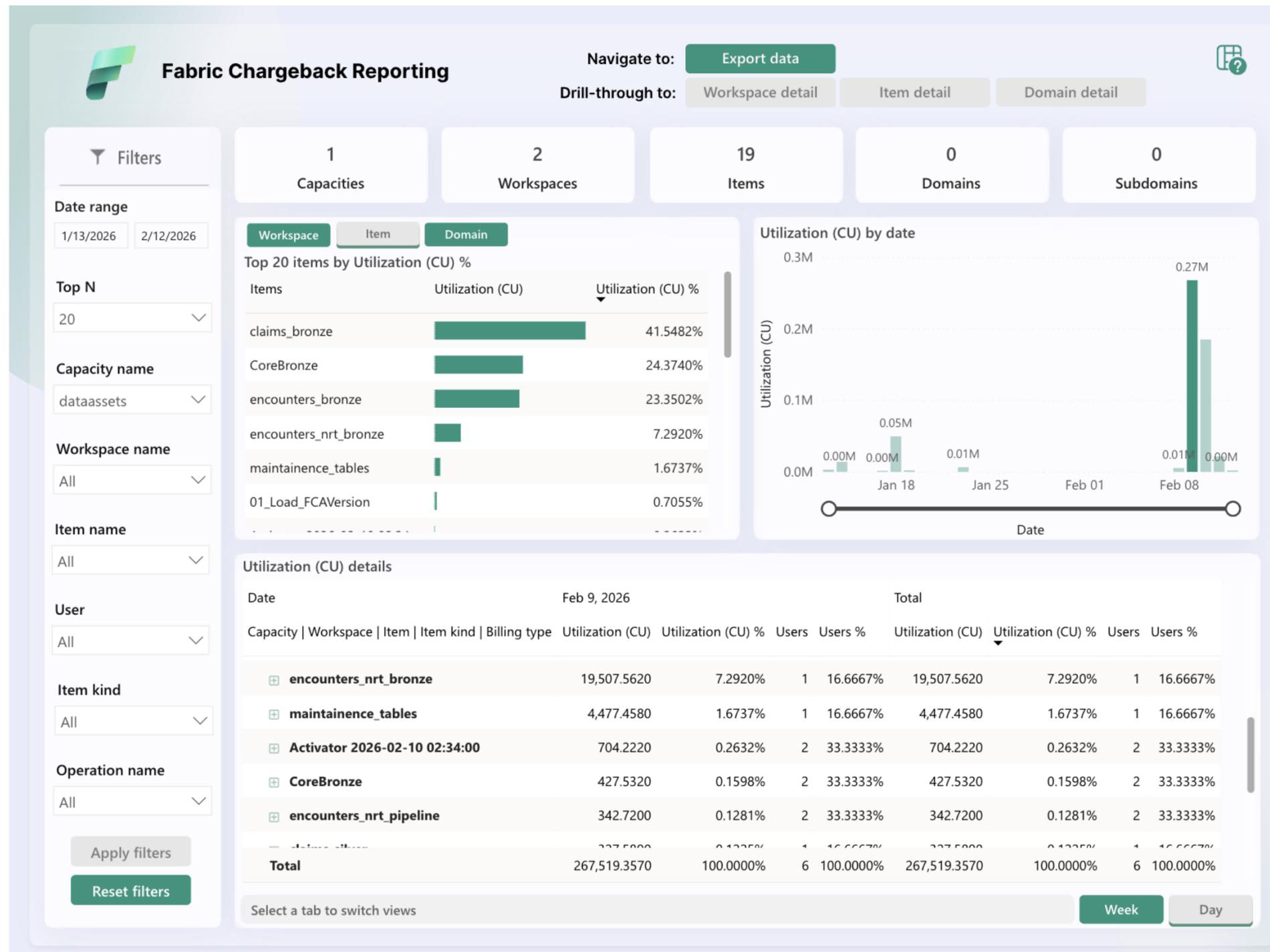


Additional Tools

IN THIS SECTION

- ▶ Tools
- ▶ Recap

Tool 1. Fabric Chargeback Reporting



Tool 2. Fabric Activator for Alerting

Capacity. Background Utilization. Alert

Home Rules Edit

Delete Start Stop Send me a test action Edit details

Explorer

- Main
 - alert
 - __type
 - utilizationBackground
 - utilizationBackground alert**
 - CapacityEvents event
 - CapacityEvents event

utilizationBackground alert Instance: 1 of 1 ID Time: Last 24 hours

Live feed Definition Analytics History

Is greater than 10000

Microsoft.Fabric.Capacity.Summary

Object IDs selected

Microsoft.Fabric.Capacity.Summary

Time (UTC)

04:00 08:00 12:00 16:00 20:00 14. Feb

Action

Teams messages

106 rows

Filter data grid

Time ↓	utilizationBackground	System.Action.Teams.Headline	System.Action.Teams.Mes
Feb 14, 2026, 1:55:00 AM ...	17767.5604513889	Activator alert utilizationBackground alert	The condition for 'utilizati
Feb 14, 2026, 1:54:00 AM ...	17767.5604513889	Activator alert utilizationBackground alert	The condition for 'utilizati
Feb 14, 2026, 1:53:00 AM ...	17767.5604513889	Activator alert utilizationBackground alert	The condition for 'utilizati
Feb 14, 2026, 1:52:00 AM ...	17767.5604513889	Activator alert utilizationBackground alert	The condition for 'utilizati
Feb 14, 2026, 1:51:00 AM ...	17767.5604513889	Activator alert utilizationBackground alert	The condition for 'utilizati
Feb 14, 2026, 1:50:00 AM ...	17752.6576736111	Activator alert utilizationBackground alert	The condition for 'utilizati
Feb 14, 2026, 1:49:00 AM ...	17752.6576736111	Activator alert utilizationBackground alert	The condition for 'utilizati
Feb 14, 2026, 1:48:00 AM ...	17752.6576736111	Activator alert utilizationBackground alert	The condition for 'utilizati

Definition

Monitor

Attribute utilizationBackground

Summarization

Operation Average

Window size 1 minute

Step size Same as window size

Add filter Add summarization

Condition

Condition Is greater than

Value 10000

Occurrence None

Property filter

Action

Action Teams message

Reset Save Save and update

Tool 3. Surge Protection in Fabric

Admin portal

- Tenant settings New
- Users
- Premium Per User
- Audit logs
- Domains
- Workloads
- Tags
- Capacity settings**
- Refresh summary
- Embed Codes
- Organizational visuals
- Organizational themes (preview)
- Azure connections
- Workspaces
- Custom branding
- Fabric identities
- Featured content

Surge Protection *Unapplied changes*

Workspace Consumption

When CU consumption by a single workspace reaches the rejection threshold, reject new operation requests and block the workspace for the specified amount of time.

On

Rejection threshold %

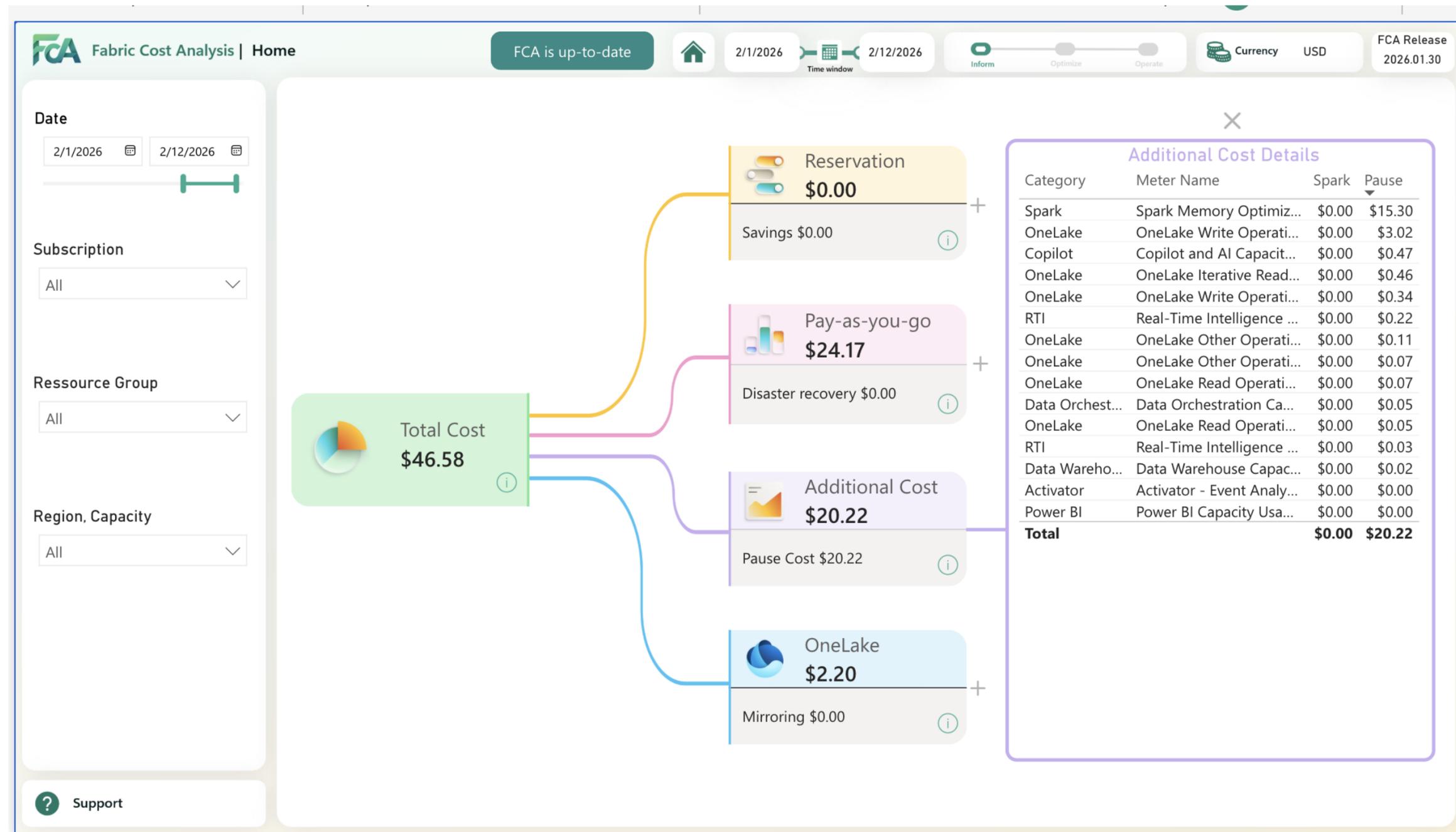
Block Hours

Background Operations

When total CU consumption reaches the rejection threshold, reject new background operation requests. When total CU consumption drops below the recovery threshold, accept new background operation requests.

Off

Tool 4. Fabric Cost Analysis



<https://community.fabric.microsoft.com/t5/Fabric-platform-Community-Blog/Fabric-Cost-Analysis-Shine-a-light-on-your-platform-costs/ba-p/4907392>

Tool 5. SemPy to Save Historical Data

```
11 q = """
12 EVALUATE 'Items'
13 """
14
15 dax_query_user = mssparkutils.env.getUserName()
16 print(dax_query_user)
17
18 target_dax_query = q
19
20 dax_result = fabric.evaluate_dax(workspace = target_workspace, dataset = target_semantic_model,dax_string = target_dax_query)
21
22 display(dax_result)
```

✓ 25 sec - Session ready in 10 sec 439 ms. Command executed in 15 sec 246 ms by lurii lurchenko on 2/12/2026, 8:13:02 PM PySpark (Python) ▾

y@dataassets.net

Table view Data Wrangler 15 columns, 33 rows ▾

Download ▾

	ABC Items[Capacity Id]	ABC Items[Item Id]	ABC Items[Item kind]	ABC Items[Item name]	ABC Items[Users]	Items[Timestamp]	ABC Items[Workspace Id]	ABC Items[Workspace name]	ABC
1	A80FFF55-D5CD-4883...	39787860-B13D-4...	Activator	Activator 2026-02-10 ...	NULL	2026-02-12 02:50:03.6...	9A048897-DCBF-423F-9...	CoreData	Bi
2	A80FFF55-D5CD-4883...	977B6D66-AB76-4...	Lakehouse	FCA	NULL	2026-02-12 02:49:25.2...	9DDDEB5C-BE40-4683-B...	FSA	Bi
3	A80FFF55-D5CD-4883...	BCAB0173-F40D-4...	Warehouse	FCA	NULL	2026-02-12 02:48:04.4...	9DDDEB5C-BE40-4683-B...	FSA	Bi
4	A80FFF55-D5CD-4883...	4CD9D7E3-13EC-4...	Dataset	FCA_Core_SM	NULL	2026-02-12 02:45:14.4...	9DDDEB5C-BE40-4683-B...	FSA	Bi
5	A80FFF55-D5CD-4883...	20DFB5BE-F454-43...	Dataset		NULL	2026-02-12 02:26:16.0...			Bi
6	A80FFF55-D5CD-4883...	FE8FB230-C85A-4...	SynapseNotebook	01_Load_Meters	NULL	2026-02-12 02:09:01.6...	9DDDEB5C-BE40-4683-B...	FSA	Bi
7	A80FFF55-D5CD-4883...	F3525674-7DF5-42...	Pipeline	Load FCA E2E	NULL	2026-02-12 02:07:03.2...	9DDDEB5C-BE40-4683-B...	FSA	Bi
8	A80FFF55-D5CD-4883...	9A956A3E-E976-4F...	SynapseNotebook	00_Deploy_FCA	NULL	2026-02-12 01:59:43.3...	9DDDEB5C-BE40-4683-B...	FSA	Bi
9	A80FFF55-D5CD-4883...	E2A9E3BC-0301-4...	SynapseNotebook	Init_FCA_Lakehouse_T...	NULL	2026-02-12 01:52:47.2...	9DDDEB5C-BE40-4683-B...	FSA	Bi
10	A80FFF55-D5CD-4883...	D2AFF1B3-35F0-44...	SynapseNotebook	01_Load_FCAVersion	NULL	2026-02-12 01:35:15.9...	9DDDEB5C-BE40-4683-B...	FSA	Bi
11	A80FFF55-D5CD-4883...	D865F72D-C4C0-4...	Pipeline	Load FCA E2E	NULL	2026-02-12 01:33:32.0...	9DDDEB5C-BE40-4683-B...	FSA	Bi
12	A80FFF55-D5CD-4883...	20DFB5BE-F454-43...	Dataset	FCA_Core_SM	NULL	2026-02-12 01:25:57.5...	9DDDEB5C-BE40-4683-B...	FSA	Bi
13	A80FFF55-D5CD-4883...	45E3A336-779C-45...	Mixed	Power BI Session Servi...	NULL	2026-02-11 22:12:31.5...	9DDDEB5C-BE40-4683-B...	FSA	Bi
14	A80FFF55-D5CD-4883...	C0FBF84B-9B2F-47...	SynapseNotebook	test1	NULL	2026-02-11 22:10:14.7...	9A048897-DCBF-423F-9...	CoreData	Bi

Code examples: https://github.com/dataassets1/microsoft-fabric-capacity-tools/blob/main/sempy_get_data.py

Conclusion & Recap

1. Plan Before You Buy

Use the SKU Estimator + Fabric Pricing page to right-size your capacity before purchase.

2. Know Your Utilization Formula

Current Utilization = Real CU + Accumulated Smoothed Debt. Throttling is cumulative — it creeps up.

3. Monitor with the Capacity Metrics App

Track CU%, detect spikes, degradation, and throttling patterns before they become disasters.

4. Respond Systematically

Alert → Identify → Root Cause → Act: start/stop capacity, resize SKU, or kill heavy processes.

5. Optimize for the Long Term

Switch to incremental loads, schedule pipelines with upscale/downscale, and separate capacities by workload.

6. Leverage Additional Tools

Fabric Activator (alerts), Chargeback (cost visibility), Surge Protection, Cost Analysis, SemPy (historical data).

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<https://aka.ms/JoinFabricUserPanel>

Join the SQL User Panel



Influence our SQL roadmap and ensure it meets your real-life needs

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