

Abstract

The Azure Admin Tool Chest for Data Engineers

I am a data engineer working with Databases, Data Lakes, Synapse and Databricks in Microsoft Azure. Some of the problems I encountered could not be solved with SQL or Python, but instead required the skills of an Azure Admin. And since all the real ones were busy, I had to administrate the things myself.

I will show with real world examples I encountered what parts of the Azure Admin Tool Chest can be relevant for the humble data engineer. I will explain:

- what headache could have been prevented with delete locks
- why I should have adhered to the principle of least privileged when assigning RBAC roles to access my Synapse workspace.
- what is RBAC anyway
- how to set up cost management to prevent Databricks or Azure Synapse stampeding over your budget
- where monitoring your resources and setting up basic alerts makes sense to prevent common catastrophes

In this session, we'll look beyond the traditional tasks of the data engineer and see what's there in the realm of Azure Administration. This knowledge can empower you to solve problems when others are too busy. The Azure Admin Tool Chest makes your skillset more well-rounded.

The Azure Admin Tool Chest for Data Engineers

Marisol Steinau



Who am I?

Marisol Steinau

- Autodidact Data Enthusiast
- > 8 years experience using Microsoft Data Platform
- Data Solution Architect @Be-terna
- Passionate about Architecture
- LinkedIn: [linkedin.com/in/marisol-steinau-bb1253253](https://www.linkedin.com/in/marisol-steinau-bb1253253)



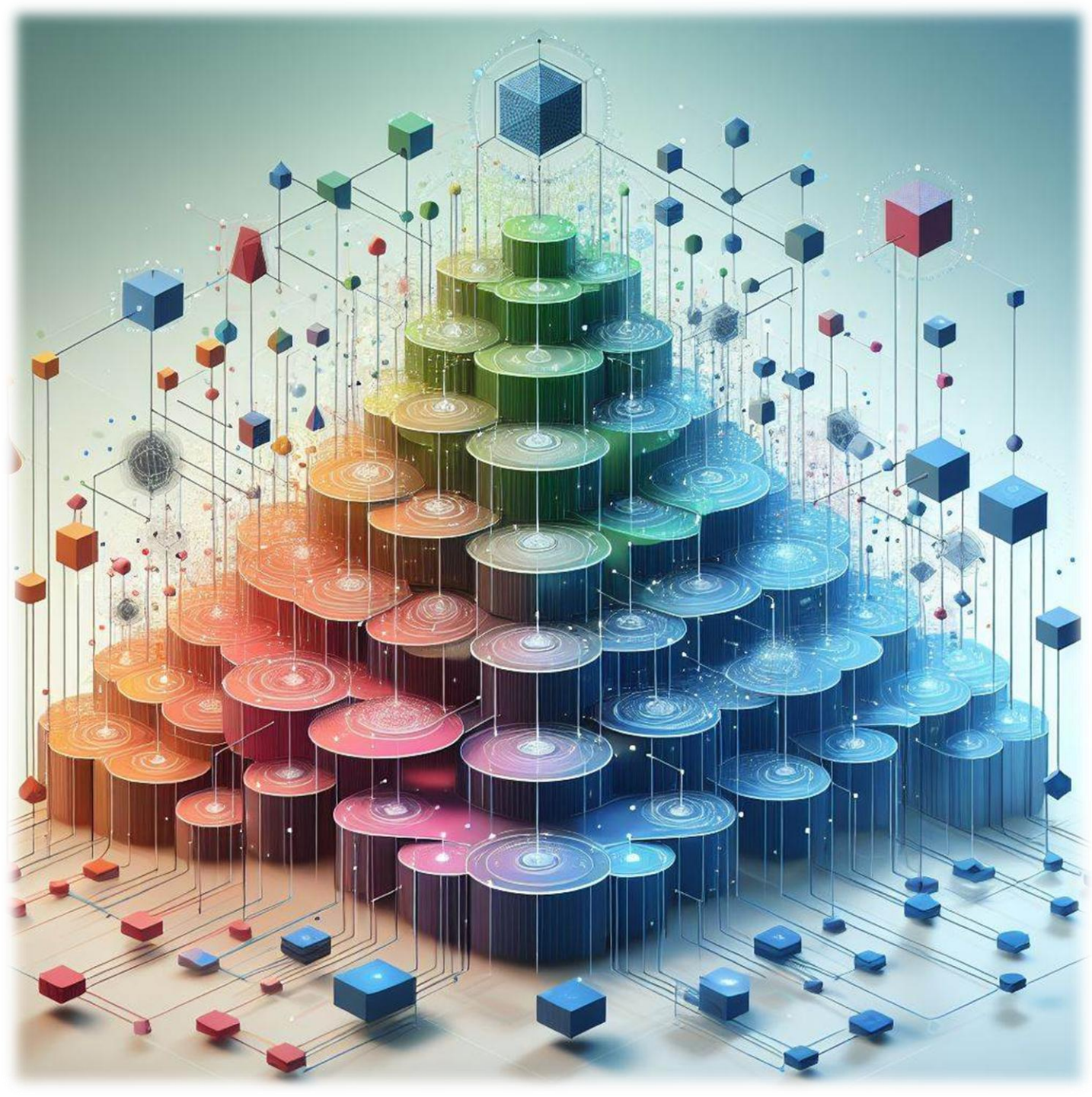
Agenda

- Recap: Azure Hierarchy
- Fail 1: Misconfiguring access control
- Fail 2: Granting resource deletion rights
- Fail 3: Going without rules
- Fail 4: Forgetting to setup monitoring
- Fail 5: Being careless about cost

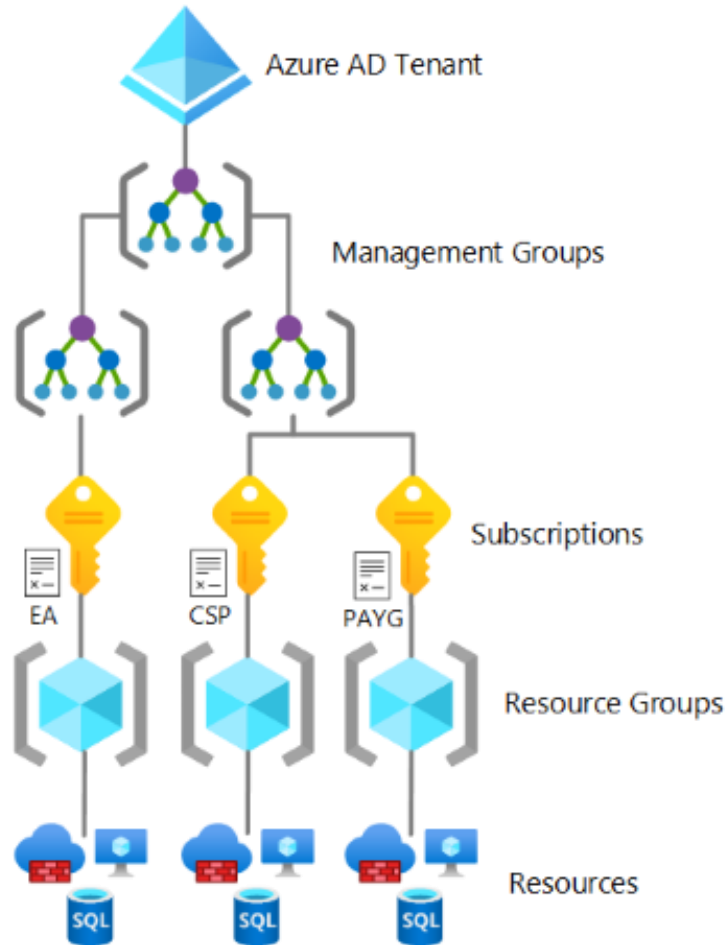


Recap: Azure Hierarchy

Organizing structure for resources



Azure Resource Hierarchy



Tenant: organization in Azure Entra ID

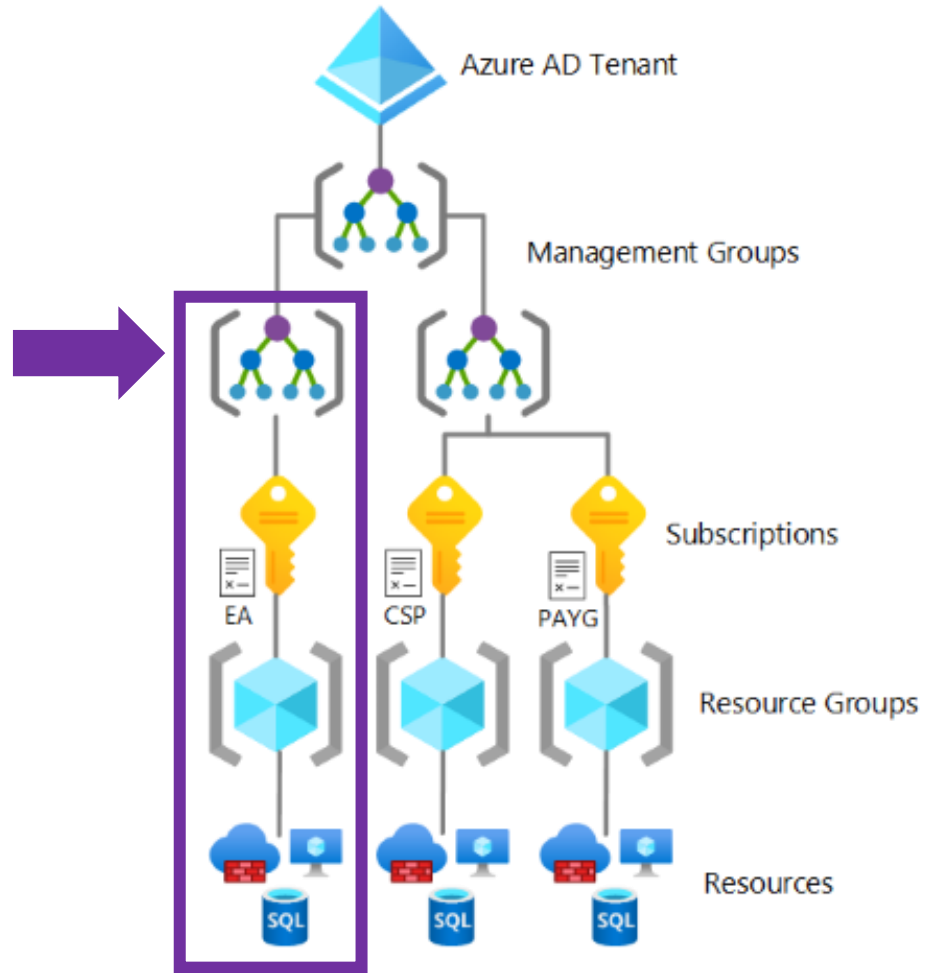
Management Groups: manage access, policy, and compliance for multiple subscriptions

Subscriptions: manage costs and the resources that are created by users, teams, or projects

Resource Groups: logical containers for deployment and management of resources

Resources: instances of services

Azure Resource Hierarchy



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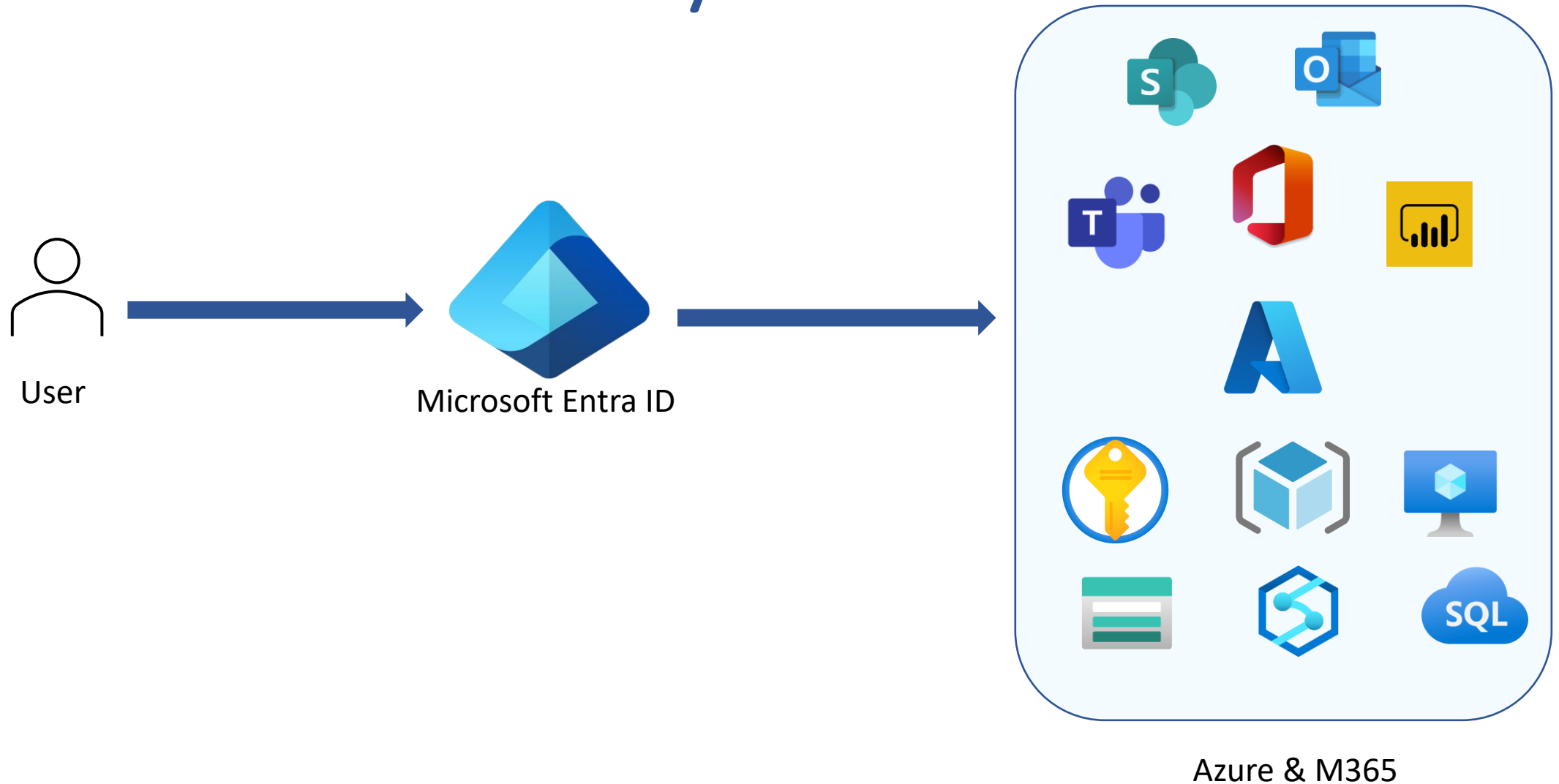
Resources: instances of services

A hand is shown interacting with a futuristic digital interface. The background is a dark blue and black grid with glowing white circuit lines and data points. A hand is visible on the right side, with fingers touching a circular button. Above the button is a small display showing numbers 4, 5, 6, 7, 9, 8, 9, 8, and 0. The text "Fail 1: Misconfiguring access control" is overlaid in white.

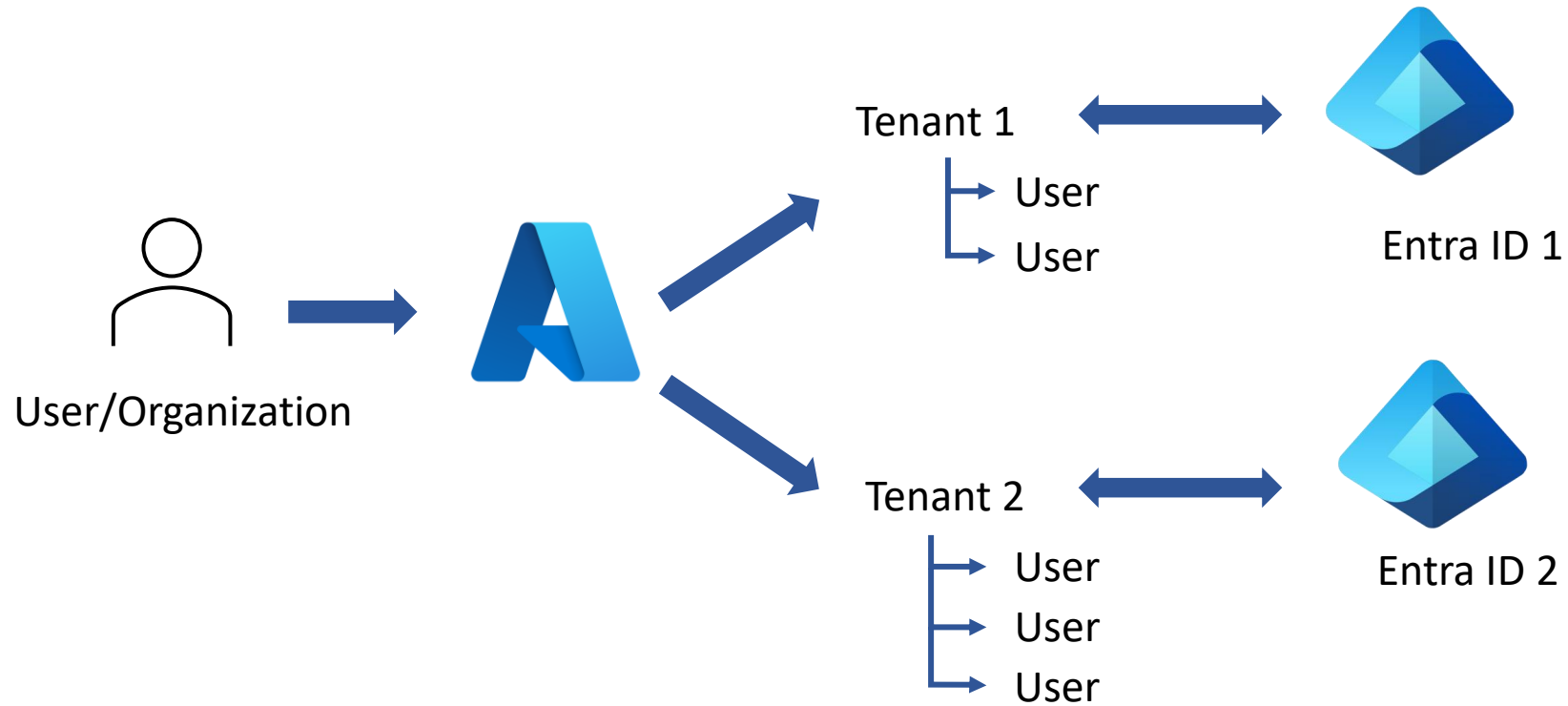
Fail 1: Misconfiguring access control

Customers are frustrated because they cannot access data

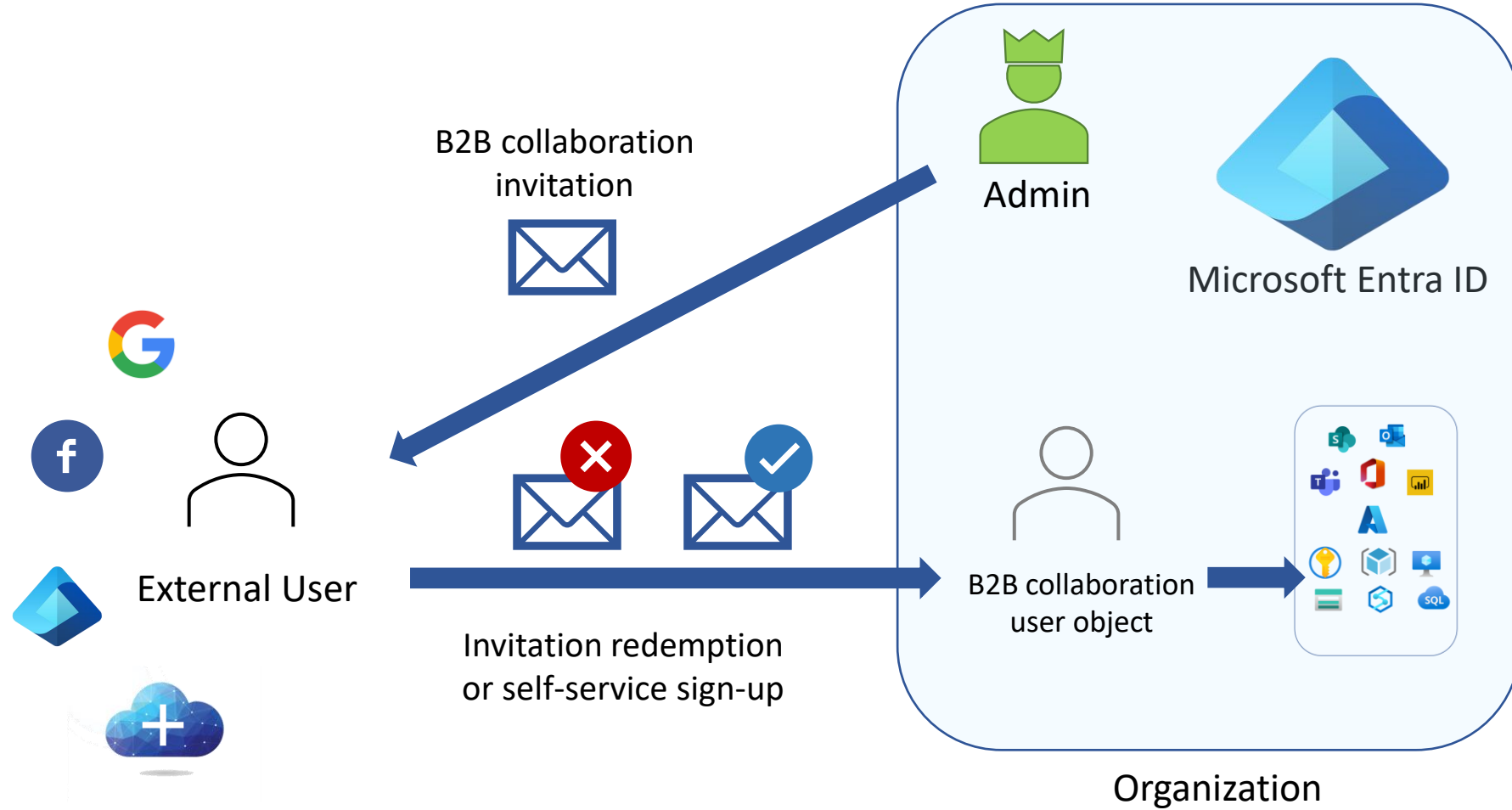
~~Azure Active Directory~~ Microsoft Entra ID



Microsoft Entra ID

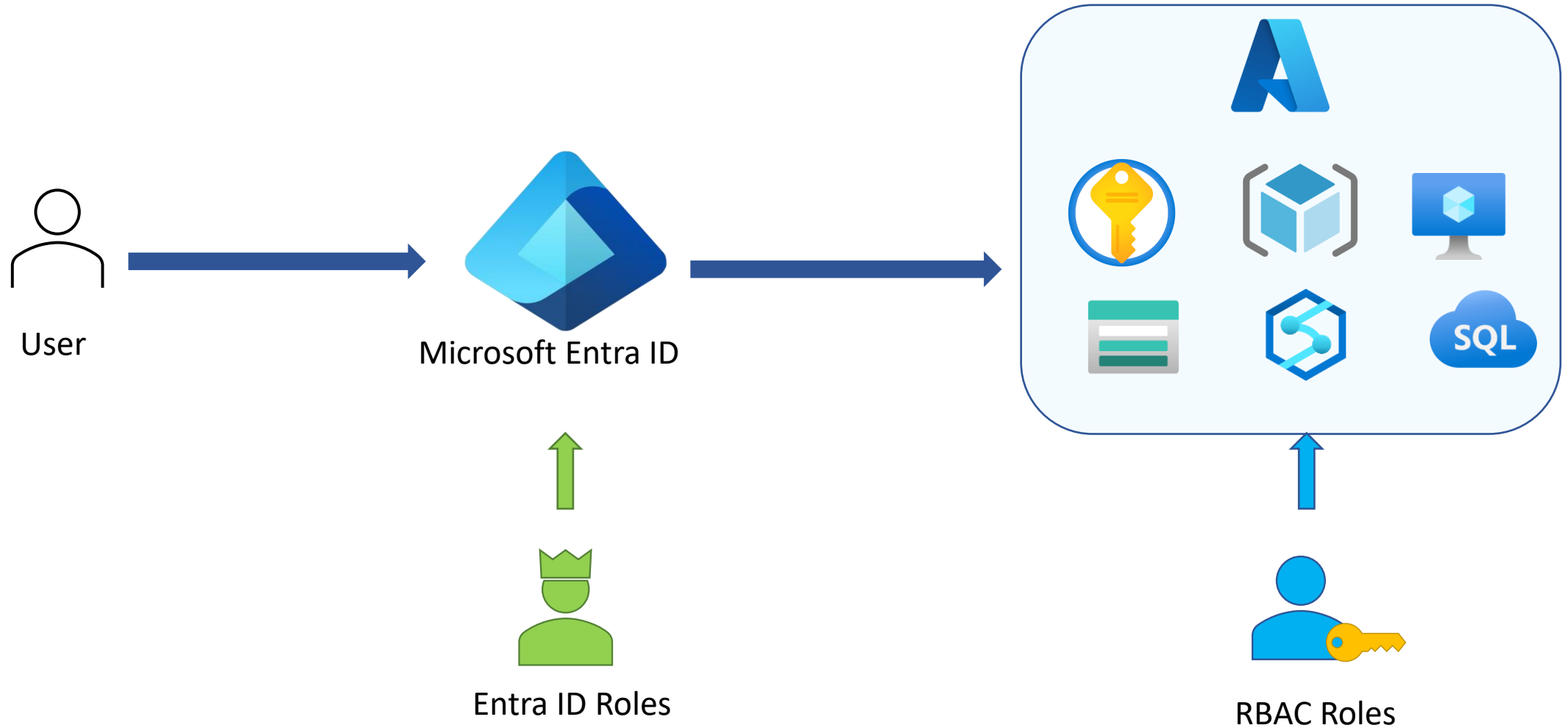


Azure B2B – External Users



Entra ID Roles vs Azure RBAC

Role-Based Access Control



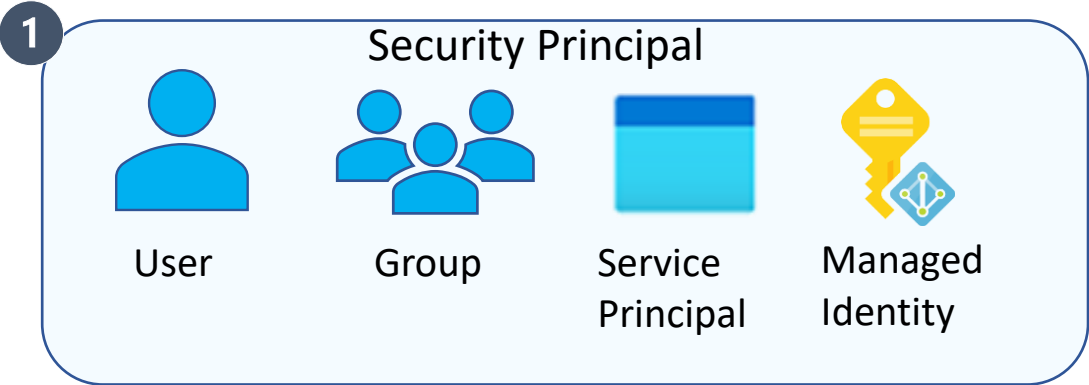
Microsoft Entra ID Roles



Most important Entra ID Roles from the data perspective:

- Global Administrator
- User Administrator
- Application Administrator
- Fabric Administrator
- Power Platform Administrator
- Azure DevOps Administrator

Role Based Access Control



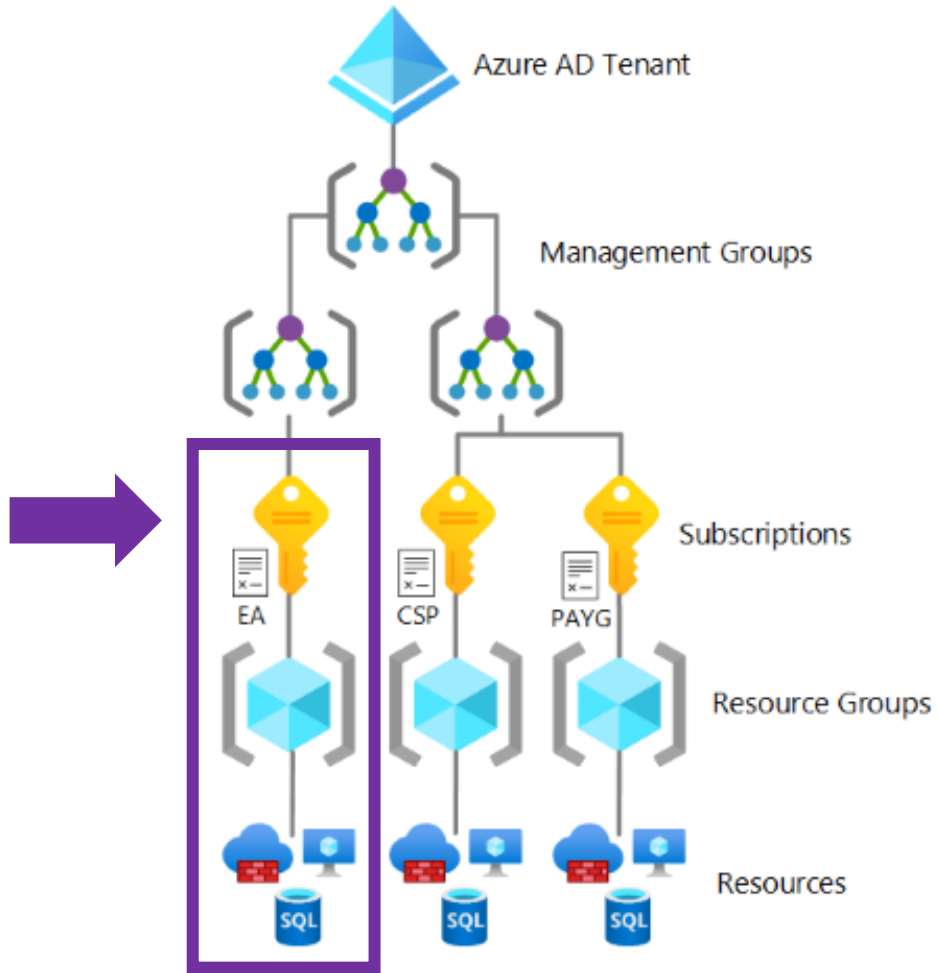
2 Role

3 Scope

	Reader	Resource specific	Custom	Contributor	Owner
	Only read	Read + Manage			Read, manage, grant

- 1 Who has access to resources?
- 2 What can they do with resources?
- 3 What is the scope of access?

Azure Resource Hierarchy



Tenant: organization in Azure Entra ID

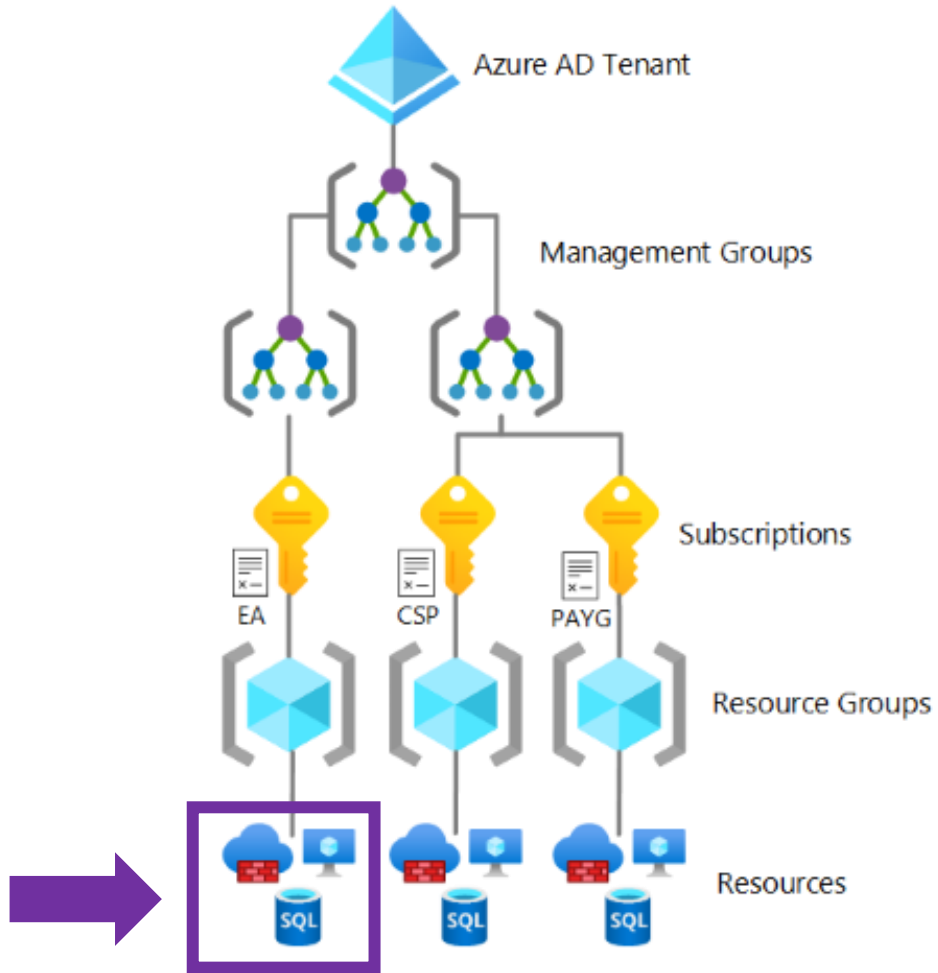
Management Groups: manage access, policy, and compliance for multiple subscriptions

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Azure Resource Hierarchy



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Resource Specific RBAC



An example for resource specific RBAC is Azure Key Vault



Home > Microsoft.Azure.SynapseAnalytics-20240524084854 | Overview > RG_ToolChest > KV-ToolChest

KV-ToolChest | Secrets

Key vault

Search

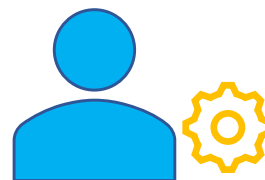
+ Generate/Import Refresh Restore Backup View sample code Manage deleted secrets

Warning: The operation is not allowed by RBAC. If role assignments were recently changed, please wait several minutes for role assignments to become effective.

Name	Type	Status
You are unauthorized to view these contents.		

- Overview
- Activity log
- Access control (IAM)
- Tags
- Diagnose and solve problems
- Access policies
- Events
- Objects
 - Keys
 - Secrets
 - Certificates

Resource Specific RBAC



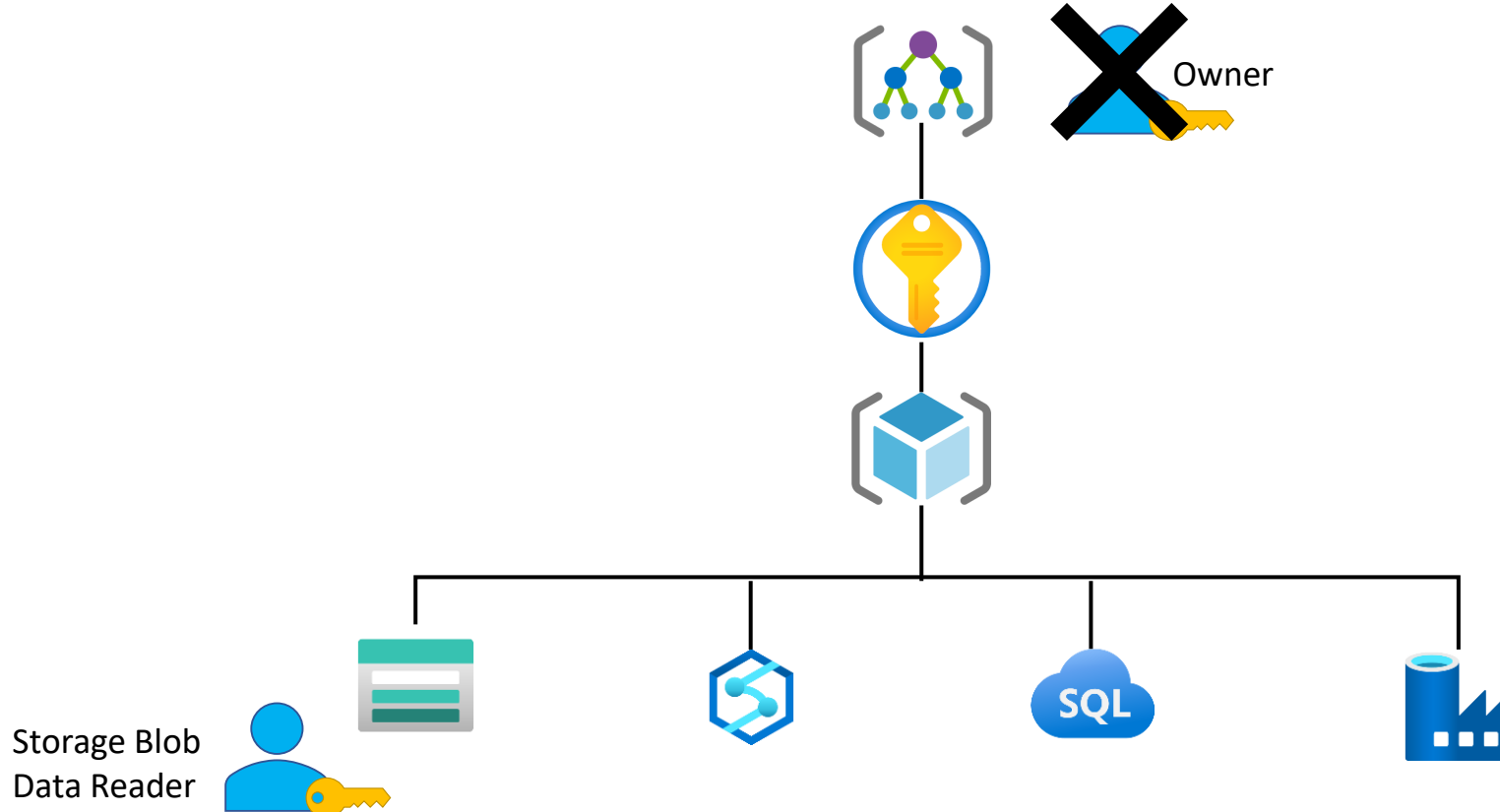
An example for resource specific RBAC is Azure Key Vault



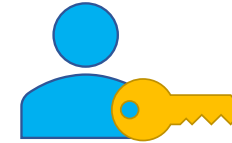
Name ↑↓	Description ↑↓
Key Vault Administrator	Perform all data plane operations on a key vault and all objects in it, including certificates, keys, and secrets. Cannot manage permissions.
Key Vault Certificate User	Read certificate contents. Only works for key vaults that use the 'Azure role-based access control' permission model.
Key Vault Certificates Officer	Perform any action on the certificates of a key vault, except manage permissions. Only works for key vaults that use the 'Azure role-based access control' permission model.
Key Vault Contributor	Lets you manage key vaults, but not access to them.
Key Vault Crypto Officer	Perform any action on the keys of a key vault, except manage permissions. Only works for key vaults that use the 'Azure role-based access control' permission model.
Key Vault Crypto Service Encryption User	Read metadata of keys and perform wrap/unwrap operations. Only works for key vaults that use the 'Azure role-based access control' permission model.
Key Vault Crypto Service Release User	Release keys. Only works for key vaults that use the 'Azure role-based access control' permission model.
Key Vault Crypto User	Perform cryptographic operations using keys. Only works for key vaults that use the 'Azure role-based access control' permission model.
Key Vault Data Access Administrator	Manage access to Azure Key Vault by adding or removing role assignments for the Key Vault Administrator, Key Vault Certificates Officer, Key Vault Crypto Officer, Key Vault Crypto User, Key Vault Crypto Service Encryption User, Key Vault Crypto Service Release User, Key Vault Data Access Administrator, Key Vault Reader, Key Vault Secrets Officer, and Key Vault Secrets User.
Key Vault Reader	Read metadata of key vaults and its certificates, keys, and secrets. Cannot read sensitive values such as secret contents or key values.
Key Vault Secrets Officer	Perform any action on the secrets of a key vault, except manage permissions. Only works for key vaults that use the 'Azure role-based access control' permission model.
Key Vault Secrets User	Read secret contents. Only works for key vaults that use the 'Azure role-based access control' permission model.

Principle of least privilege

Each Security Principal should only have as many permissions as it needs to perform its tasks .



Tips when you are not



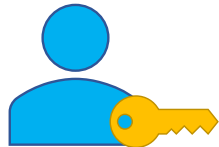
Privileged Identity Management



Stay on good terms with the people who can grant roles



User Access Admin (RBAC)



Principle of least privilege



A man in a grey suit is sitting at a desk, looking down at a laptop screen with a distressed expression. His hand is raised to his forehead, and he is wearing a watch. The background is blurred, showing office equipment.

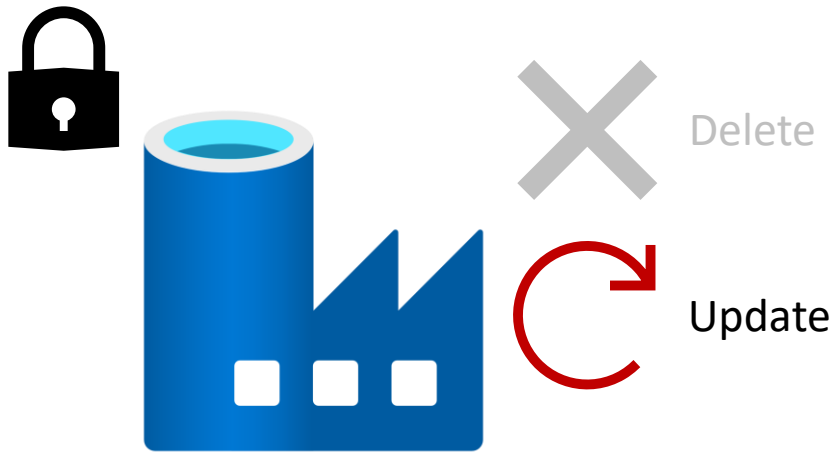
Fail 2: Granting resource deletion rights

A colleague deleted the storage account of our prod environment

Azure Resource Locks

Locking resources can help ensure users don't accidentally delete or modify resources.

Delete Locks



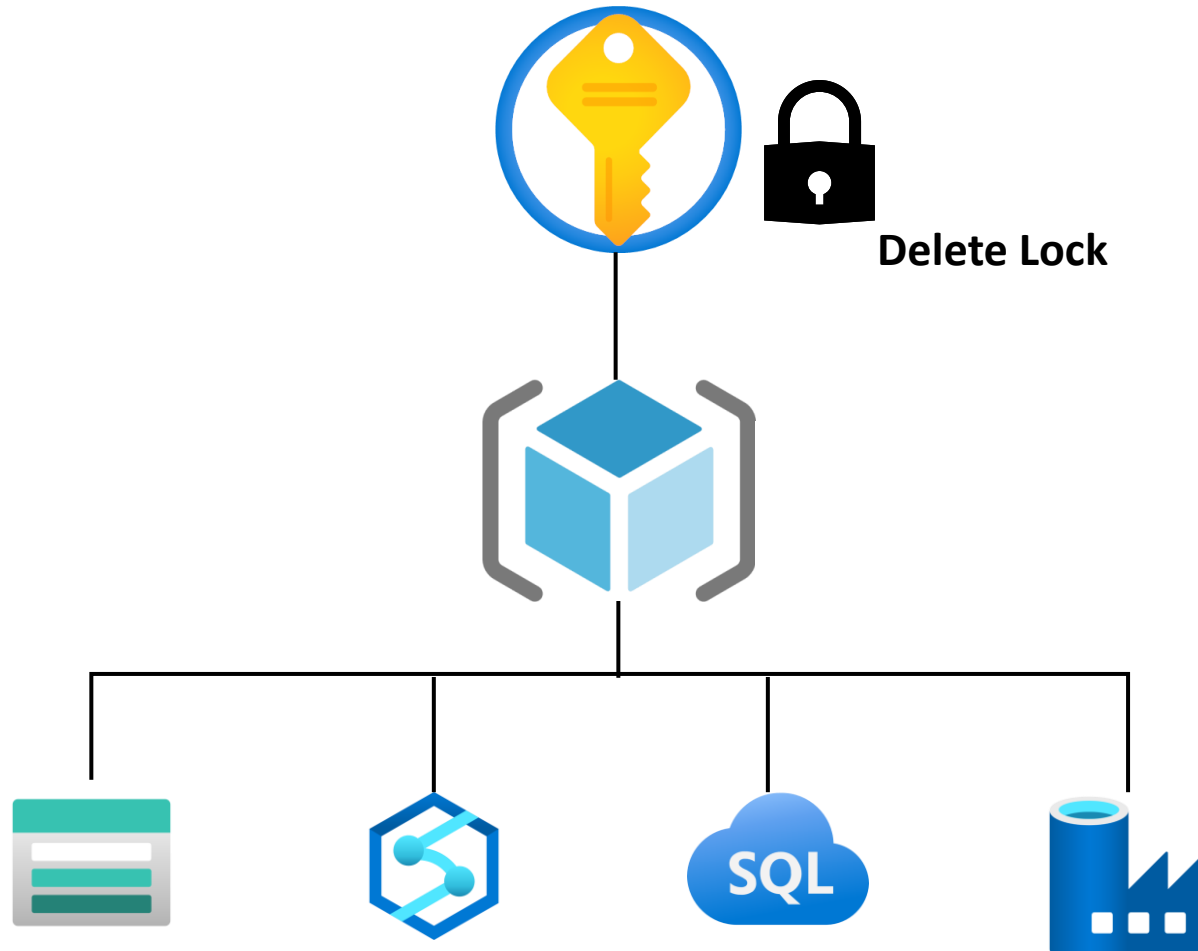
ReadOnly Locks



Owners or **user access administrators** may create or remove locks.
They must remove the lock before they can delete a resource.

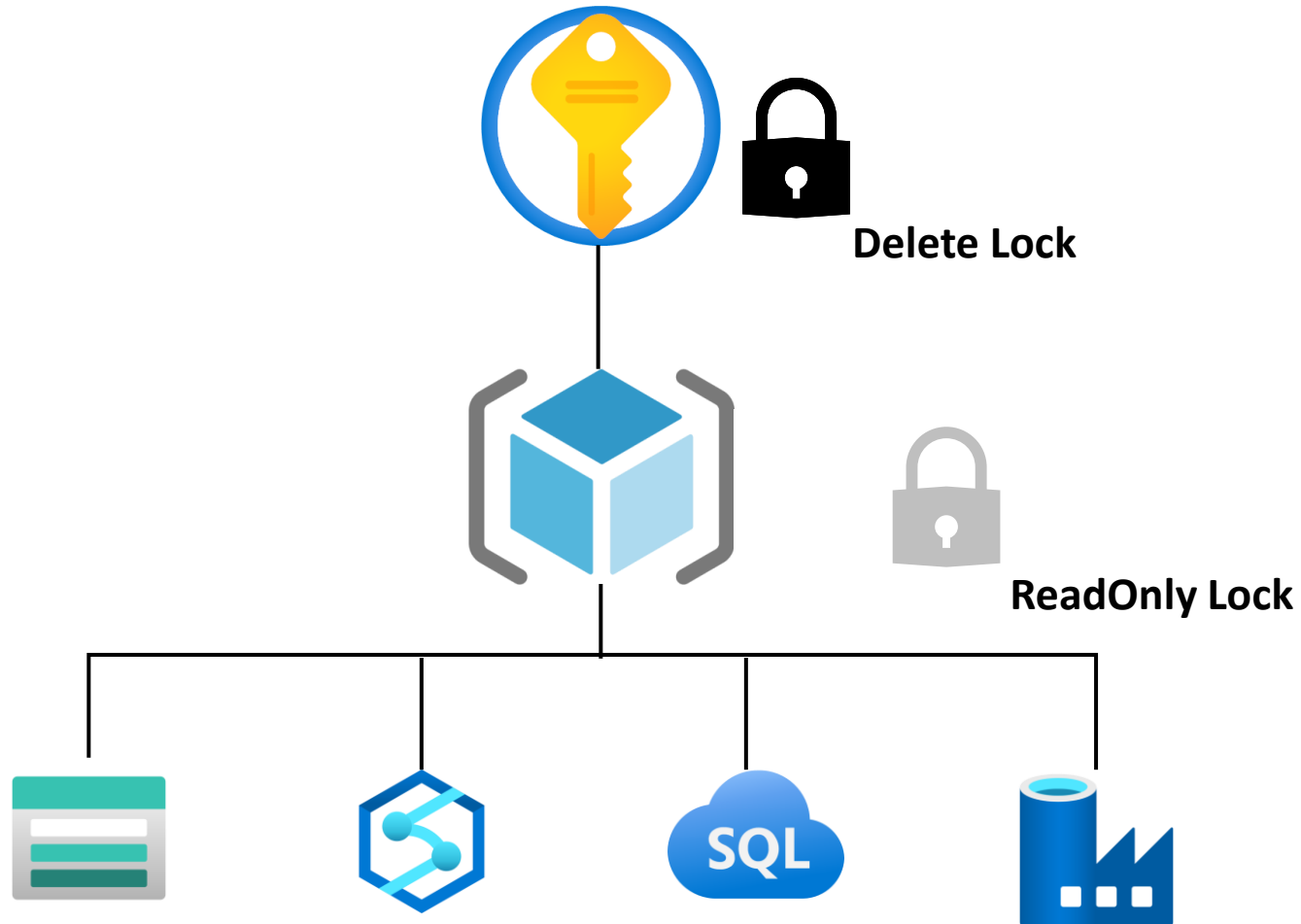
Azure Resource Locks

Inheritance



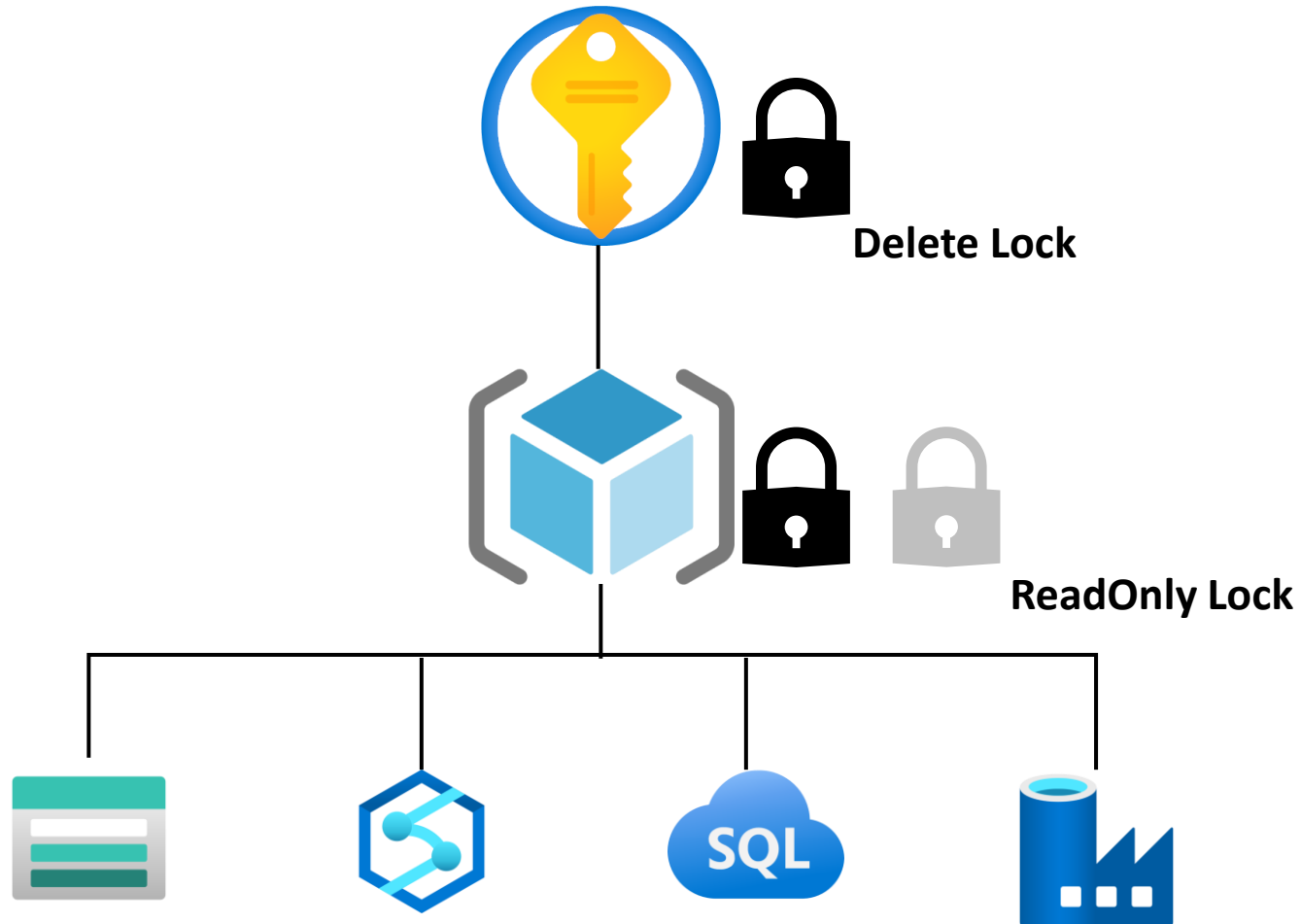
Azure Resource Locks

Inheritance



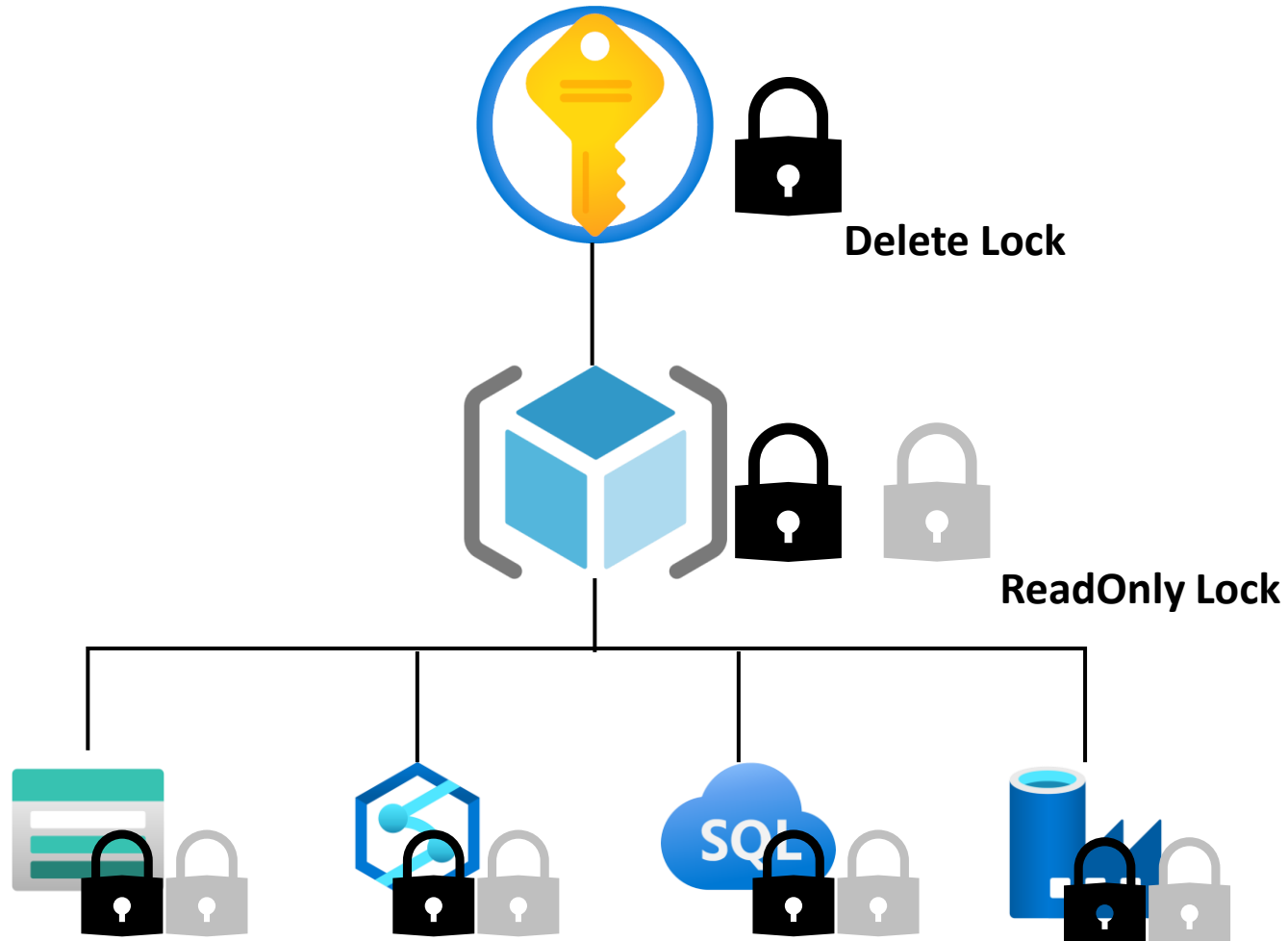
Azure Resource Locks

Inheritance



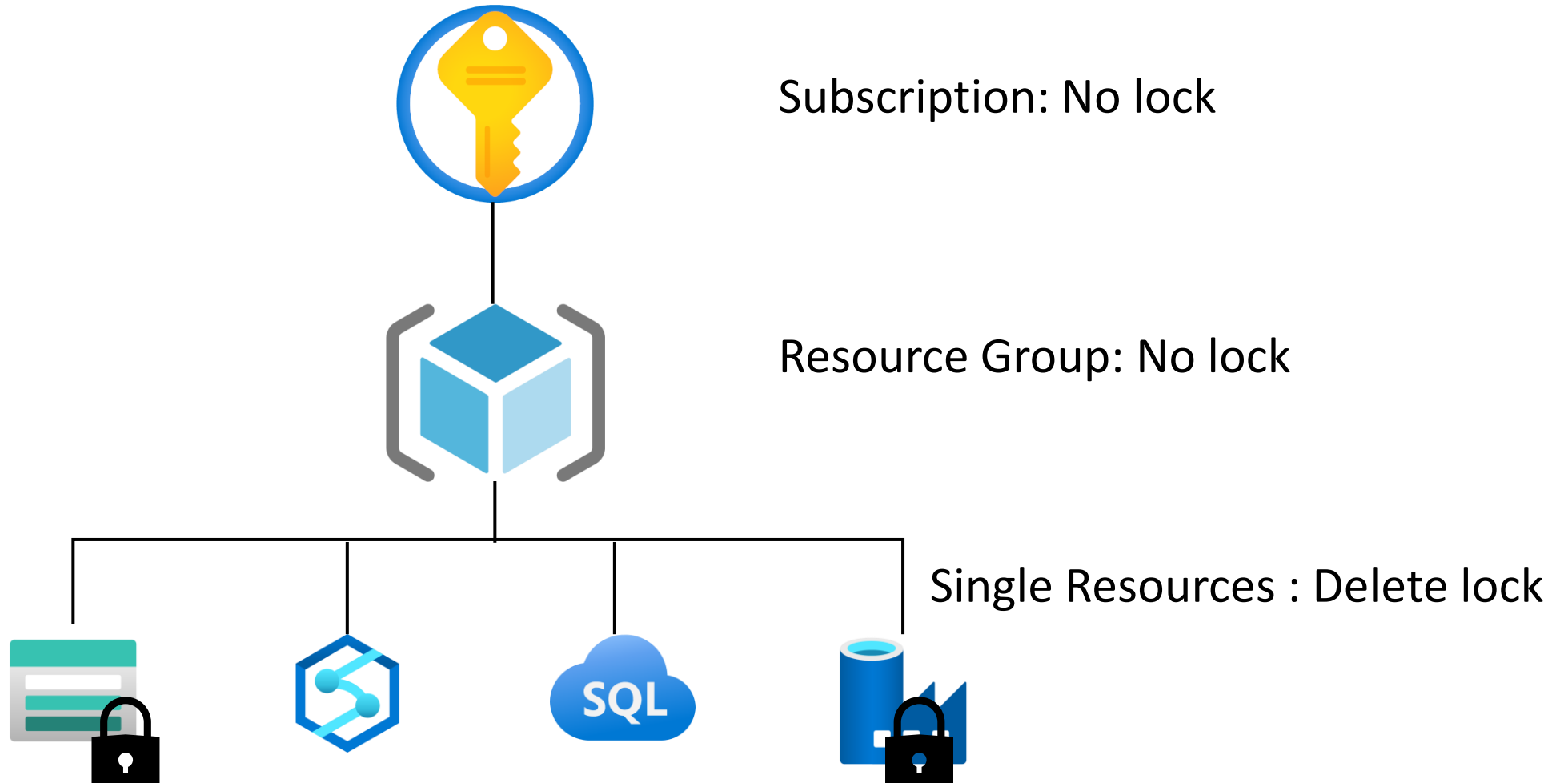
Azure Resource Locks

Inheritance



Azure Resource Locks

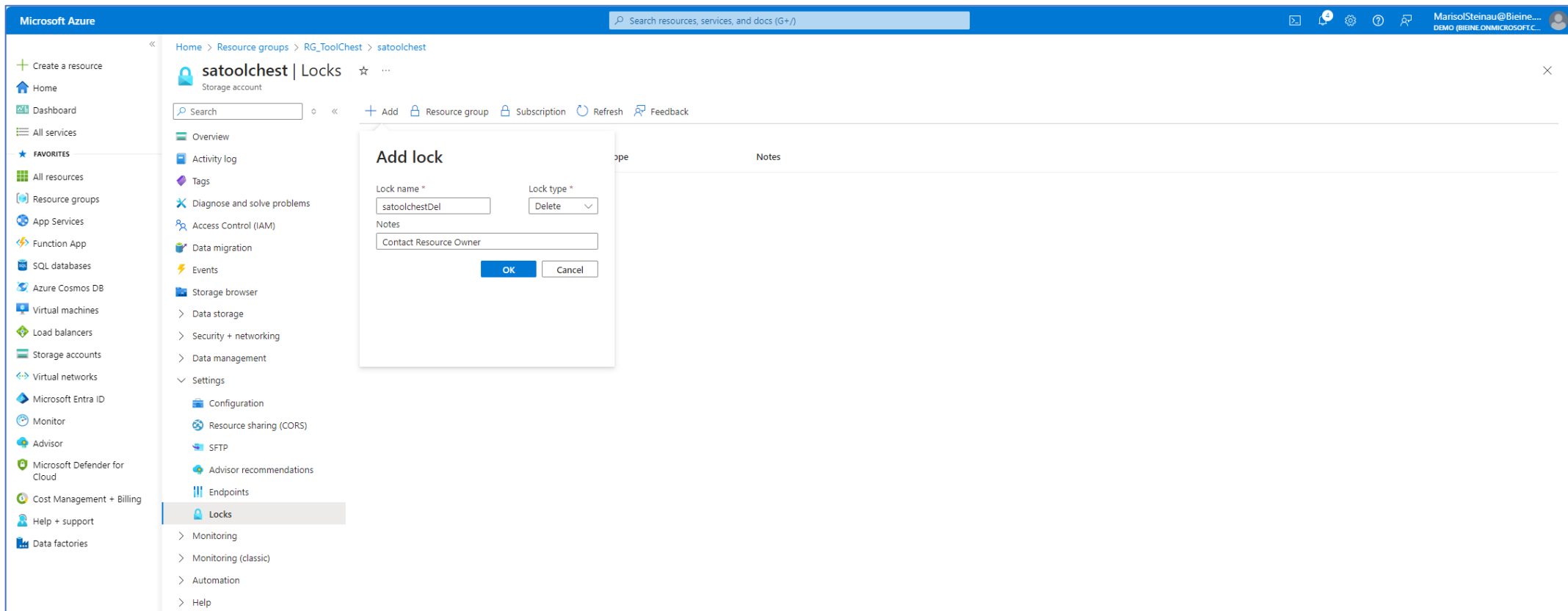
Recommendation



Azure Resource Locks

Applying locks

At the Resource level





Fail 3: Going without rules

Users managed to burn through a pile of money in a couple of days with Microsoft Fabric

Azure Policies

Corporate Standards

Do's

Fabric SKU < F64

HTTPs

Azure Tags

...

Dont's

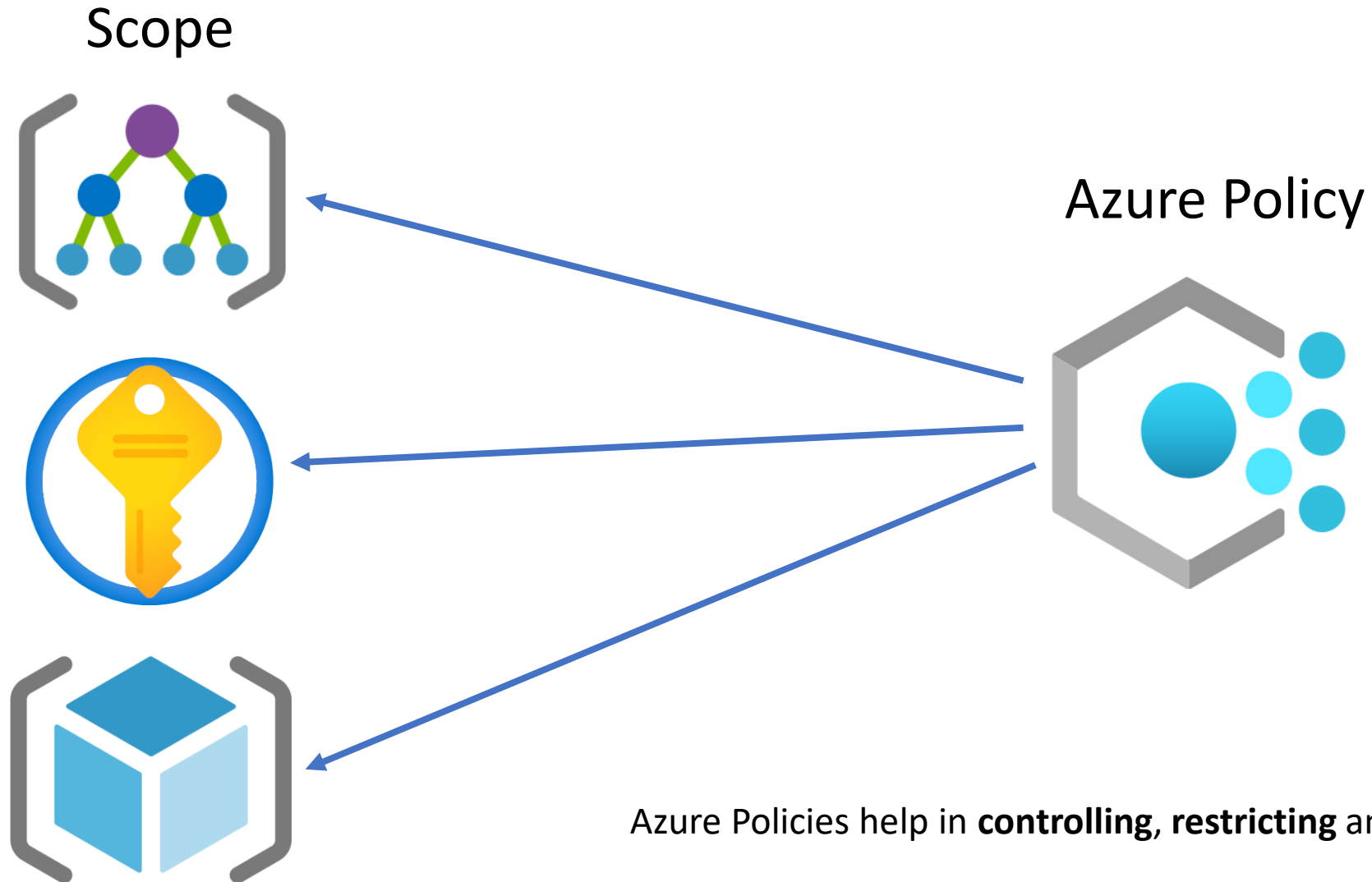
Fabric SKU >= F64

Spark Pool SKU > Medium

Location <> Europe

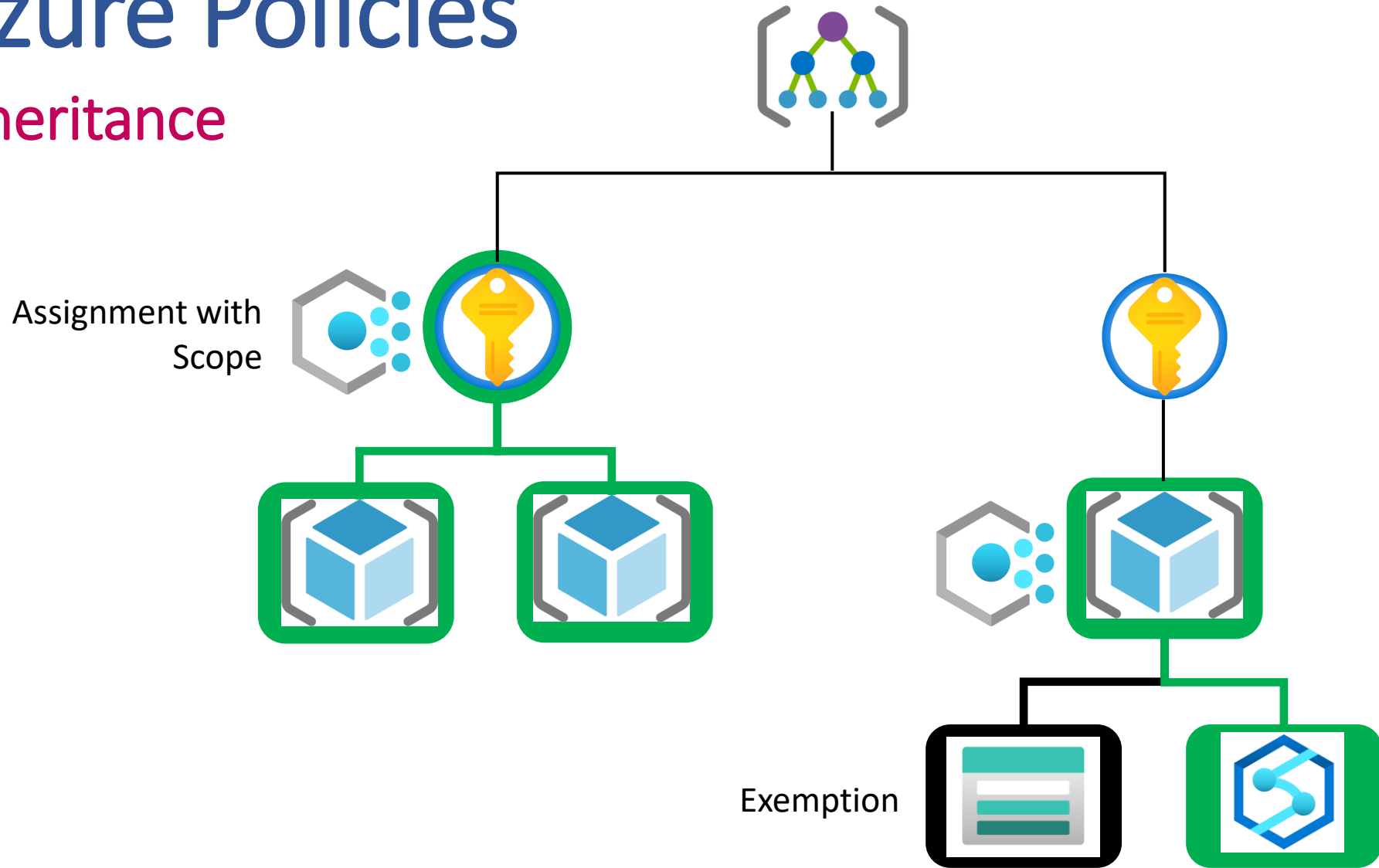
...

Azure Policies



Azure Policies

Inheritance



Azure Policies

Instance details

Storage account name * ⓘ

satoolchestpolicydemo

Region * ⓘ

(Africa) South Africa North

[Deploy to an Azure Extended Zone](#)

✖ Resources can only be created in the locations Germany North, Germany West Central and Germany ([Policy details](#))

Performance * ⓘ

☒ **Standard:** Recommended for most scenarios (general-purpose v2 account)

☐ **Premium:** Recommended for scenarios that require low latency.

Redundancy * ⓘ

Locally-redundant storage (LRS)

Azure Policies

Create a resource

Home

Dashboard

All services

FAVORITES

All resources

Resource groups

App Services

Function App

SQL databases

Azure Cosmos DB

Virtual machines

Load balancers

Storage accounts

Virtual networks

Microsoft Entra ID

Monitor

Advisor

Microsoft Defender for Cloud

Cost Management + Billing

Help + support

Data factories

Home > Policy >

Allowed locations

Policy compliance

View assignment Create remediation task Create exemption Activity Logs

Essentials

Name : Allowed locations

Description : --

Assignment ID : /subscriptions/d3a6d337-5d00-48be-8db0-271e755b197b/providers/Microsoft.Authorization/policyAssignments/...

Scope : DemoSubscription

Compliance state

Non-compliant

Overall resource compliance

67%

20 out of 30

Resources by compliance state

20 - Compliant

10 - Non-compliant

Details

Effect Type Deny

Parent Initiative <<NONE>>

Resource Compliance

Filter by resource name or ID...

Compliance state : All compliance states

Resource type : All selected

Location : All selected

Name	Compliance state	Compliance reason	Resource Type	Location	Scope	Last evaluated	
kv-toolchest	Non-compliant	Details	microsoft.keyvault/vaults	westeurope	DemoSubscription/RG_ToolChest	5/26/24, 4:52:50 PM GMT+2	...
ftcoolchest	Compliant	Details	microsoft.fabric/capacities	germanywestcentral	DemoSubscription/RG_ToolChest	5/26/24, 4:52:50 PM GMT+2	...
dev-ci-cd-demo-adf-ms	Compliant	Details	microsoft.datafactory/factories	germanywestcentral	DemoSubscription/dev-ci-cd-demo-rg-ms	5/26/24, 4:52:50 PM GMT+2	...
stcovidreportingms-35648dd1-c3c6-453f-918e-83e647824d1	Compliant	Details	microsoft.eventgrid/systemtopics	germanywestcentral	DemoSubscription/RG-Covid-Reporting	5/26/24, 4:52:50 PM GMT+2	...
test-ci-cd-demo-adf-ms	Compliant	Details	microsoft.datafactory/factories	germanywestcentral	DemoSubscription/test-ci-cd-demo-rg	5/26/24, 4:52:50 PM GMT+2	...
adf-ms-03041990	Compliant	Details	microsoft.datafactory/factories	germanywestcentral	DemoSubscription/RG-Covid-Reporting	5/26/24, 4:52:50 PM GMT+2	...
prod-ci-cd-demo-adf-ms	Compliant	Details	microsoft.datafactory/factories	germanywestcentral	DemoSubscription/prod-ci-cd-demo-rg	5/26/24, 4:52:50 PM GMT+2	...
ag_adf_dev	Compliant	Details	microsoft.insights/actiongroups	germanywestcentral	DemoSubscription/dev-ci-cd-demo-rg-ms	5/26/24, 4:52:50 PM GMT+2	...
action group admin	Compliant	Details	microsoft.insights/actiongroups	global	DemoSubscription/RG_ToolChest	5/26/24, 4:52:50 PM GMT+2	...
synapse-course-cosmos-db-ms	Non-compliant	Details	microsoft.documentdb/databaseaccounts	francecentral	DemoSubscription/RG-Synapse	5/26/24, 4:52:50 PM GMT+2	...
ser-toolchest	Non-compliant	Details	microsoft.sql/servers	westeurope	DemoSubscription/RG_ToolChest	5/26/24, 4:52:51 PM GMT+2	...
synapse pipeline failure	Non-compliant	Details	microsoft.insights/scheduledqueryrules	westeurope	DemoSubscription/RG_ToolChest	5/26/24, 4:52:51 PM GMT+2	...
prodiccdemodlms	Compliant	Details	microsoft.storage/storageaccounts	germanywestcentral	DemoSubscription/prod-ci-cd-demo-rg	5/26/24, 4:52:51 PM GMT+2	...
thididfunctionterstasrtg	Compliant	Details	microsoft.insights/scheduledqueryrules	germanywestcentral	DemoSubscription/RG_ToolChest	5/26/24, 4:52:51 PM GMT+2	...
ws-toolchest	Non-compliant	Details	microsoft.synapse/workspaces	westeurope	DemoSubscription/RG_ToolChest	5/26/24, 4:52:51 PM GMT+2	...
ws-toolchest	Non-compliant	Details	microsoft.sql/servers	westeurope	DemoSubscription/mg-RG-Toolchest	5/26/24, 4:52:51 PM GMT+2	...
dbtoolchest	Non-compliant	Details	microsoft.sql/servers/databases	westeurope	DemoSubscription/RG_ToolChest	5/26/24, 4:52:51 PM GMT+2	...
defaultquerypack	Non-compliant	Details	microsoft.operationalinsights/querypacks	westeurope	DemoSubscription/LogAnalyticsDefaultReso...	5/26/24, 4:52:51 PM GMT+2	...
ws-synapse-ms-playground	Compliant	Details	microsoft.sql/servers	germanywestcentral	DemoSubscription/RG-managed-Synapse	5/26/24, 4:52:51 PM GMT+2	...
testiccdemodlms	Compliant	Details	microsoft.storage/storageaccounts	germanywestcentral	DemoSubscription/RG-Covid-Reporting	5/26/24, 4:52:51 PM GMT+2	...



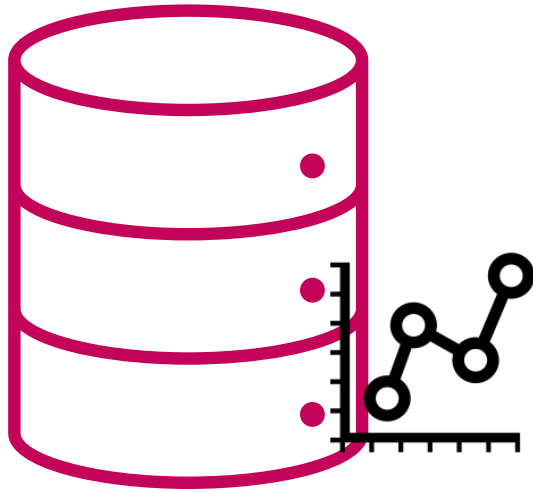
Fail 4: Forgetting to setup monitoring

The customer's report did not have any data
and we noticed way too late



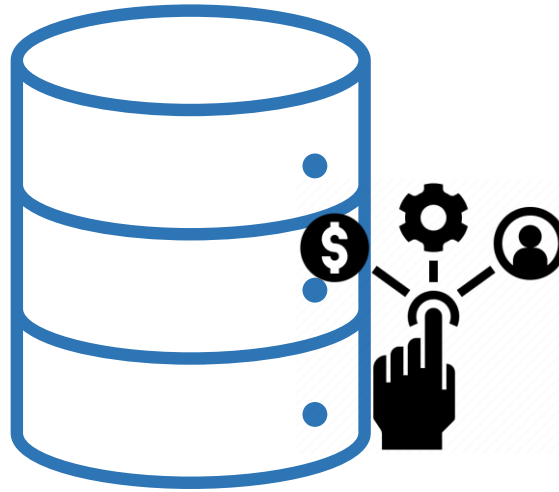
Azure Monitor

Metrics



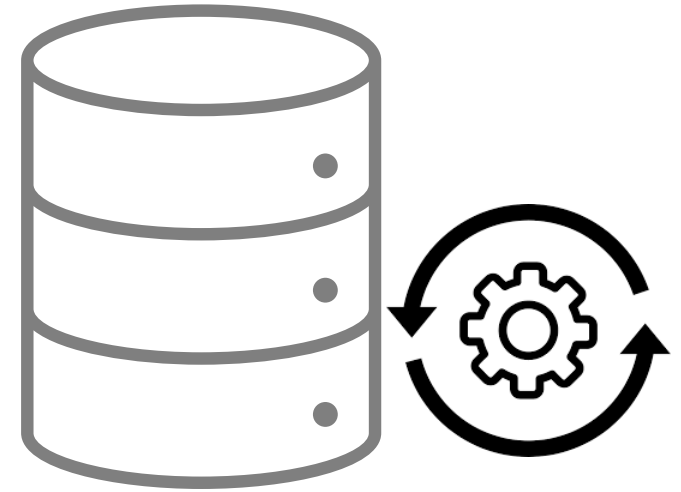
Numerical values

Activity Logs



Operations on
resources

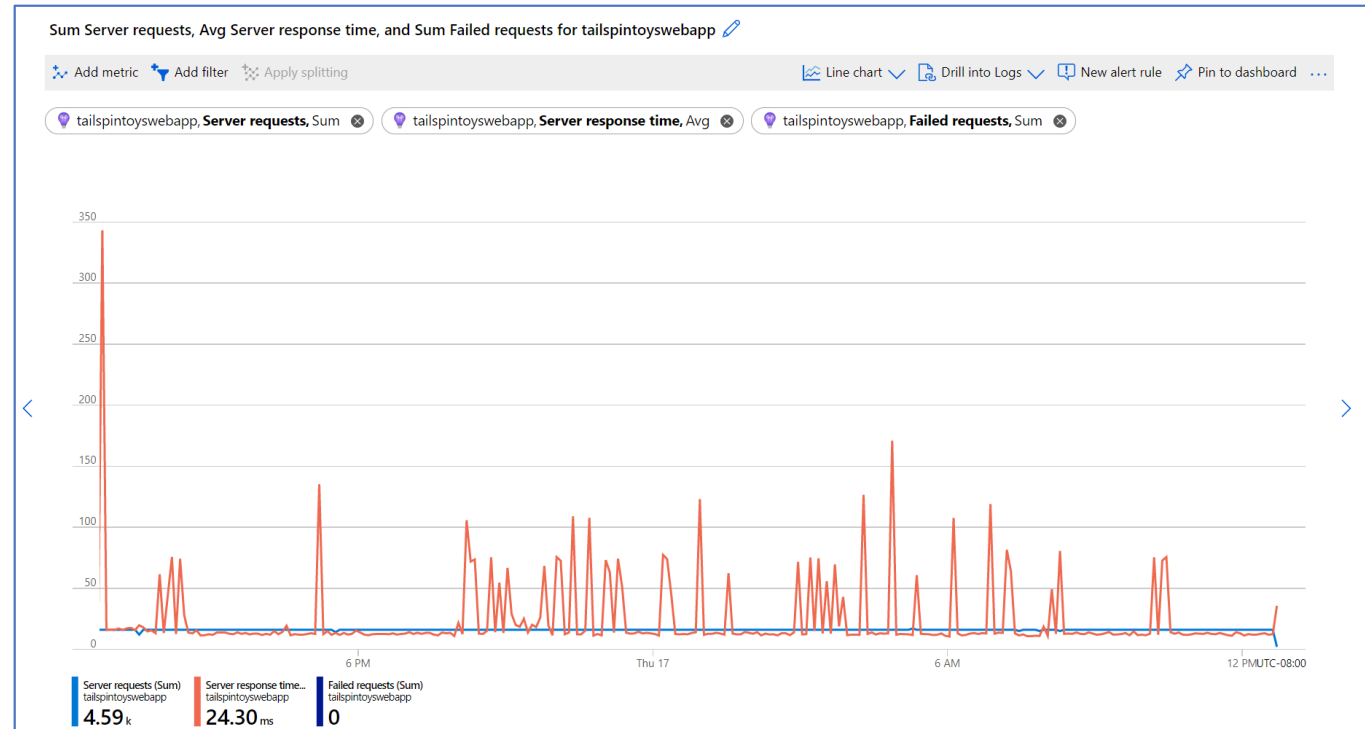
Resource Logs



Operations by
resources

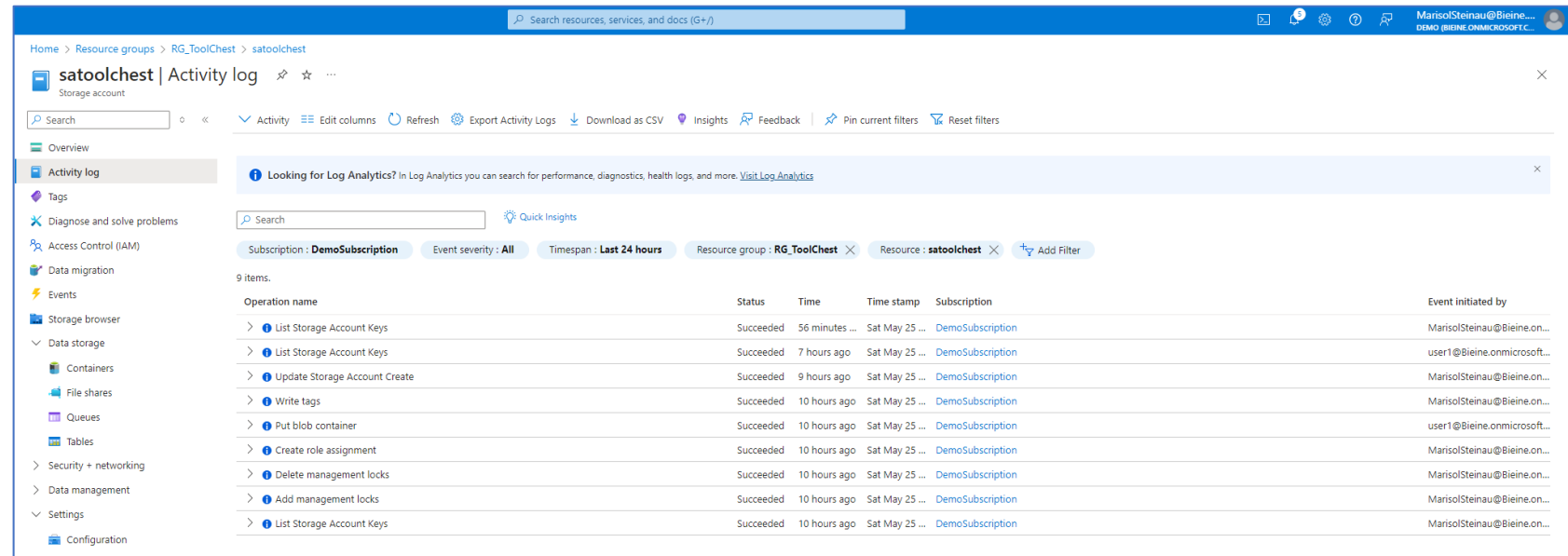
Metrics

- Collection of numeric data
- Support of near-real time
- Saved for 30 days
- Useful for alerts
- Based on resources



Activity Logs

- Operations on resources
- What? When? Who?
- Saved for 90 days
- Useful for alerts
- Based on resources



The screenshot shows the Azure Activity Log interface for a storage account named 'satoolchest'. The left sidebar contains navigation options: Overview, Activity log (selected), Tags, Diagnose and solve problems, Access Control (IAM), Data migration, Events, Storage browser, Data storage, Containers, File shares, Queues, Tables, Security + networking, Data management, Settings, and Configuration. The main area displays a table of activity logs with columns: Operation name, Status, Time, Time stamp, Subscription, and Event initiated by. The table shows 9 items, all with a status of 'Succeeded'. The operations include 'List Storage Account Keys', 'Update Storage Account Create', 'Write tags', 'Put blob container', 'Create role assignment', 'Delete management locks', 'Add management locks', and 'List Storage Account Keys'. The interface also includes a search bar, filters for Subscription (DemoSubscription), Event severity (All), Timespan (Last 24 hours), and Resource group (RG_ToolChest). A notification banner at the top suggests looking for Log Analytics.





Operation name	Status	Time	Time stamp	Subscription	Event initiated by
> List Storage Account Keys	Succeeded	56 minutes ...	Sat May 25 ...	DemoSubscription	MarisolSteinau@Bieine.on...
> List Storage Account Keys	Succeeded	7 hours ago	Sat May 25 ...	DemoSubscription	user1@Bieine.onmicrosoft...
> Update Storage Account Create	Succeeded	9 hours ago	Sat May 25 ...	DemoSubscription	MarisolSteinau@Bieine.on...
> Write tags	Succeeded	10 hours ago	Sat May 25 ...	DemoSubscription	MarisolSteinau@Bieine.on...
> Put blob container	Succeeded	10 hours ago	Sat May 25 ...	DemoSubscription	user1@Bieine.onmicrosoft...
> Create role assignment	Succeeded	10 hours ago	Sat May 25 ...	DemoSubscription	MarisolSteinau@Bieine.on...
> Delete management locks	Succeeded	10 hours ago	Sat May 25 ...	DemoSubscription	MarisolSteinau@Bieine.on...
> Add management locks	Succeeded	10 hours ago	Sat May 25 ...	DemoSubscription	MarisolSteinau@Bieine.on...
> List Storage Account Keys	Succeeded	10 hours ago	Sat May 25 ...	DemoSubscription	MarisolSteinau@Bieine.on...

Resource Logs

- Operations by resources
- Logs are generated automatically but not stored
- Storage has to be set-up
- Based on resources

[Home](#) > [Resource groups](#) > [RG_ToolChest](#) > [ws-toolchest](#) | [Diagnostic settings](#) >

Diagnostic setting ...

 Save  Discard  Delete  Feedback

A diagnostic setting specifies a list of categories of platform logs and/or metrics that you want to collect from a resource, and one or more destinations that you would stream them to. Normal usage charges for the destination will occur. [Learn more about the different log categories and contents of those logs](#)

Diagnostic setting name: Ds_ws-toolchest

Logs

Category groups ⓘ

☐ audit ☐ allLogs

Categories

☒ Synapse RBAC Operations

☐ Synapse Gateway Api Requests

☒ Built-in Sql Pool Requests Ended

☒ Integration Pipeline Runs

☒ Integration Activity Runs

☒ Integration Trigger Runs

☐ Synapse Link Event

Destination details

☒ Send to Log Analytics workspace

Subscription

DemoSubscription ▼

Log Analytics workspace

LAW-ToolChest (germanywestcentral) ▼

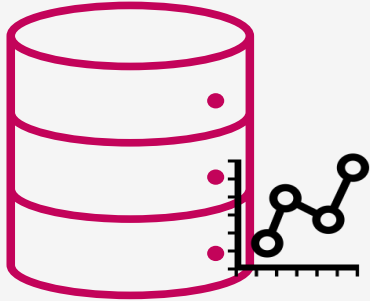
☐ Archive to a storage account

☐ Stream to an event hub

☐ Send to partner solution

Collect Monitoring Data

Metrics



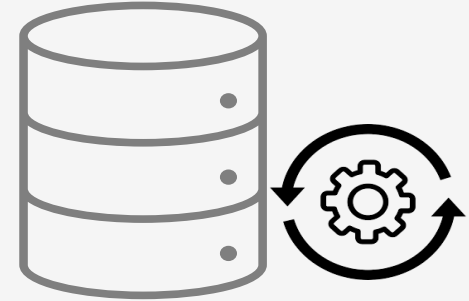
Numerical values

Activity Logs



Operations on
resources

Resource Logs



Operations by
resources



D diagnostic Settings

Log Analytics Workspace



Event Hubs



Azure Storage



Partner Solution





LAW-ToolChest | Logs



Log Analytics workspace

Search



New Query 1



LAW-ToolChest

Select scope

Run

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Logs

Settings

Tables

Agents

Usage and estimated costs

Data export

Network isolation

Linked storage accounts

Properties

Locks

Classic

Monitoring

Automation

Help

Tables

Queries

Functions

Filter



Search

Filter

Group by: Resource type

Collapse all

Favorites

Key Vaults


Storage Accounts

Synapse Workspaces

- AzureActivity
- AzureMetrics
- SynapseIntegrationActivityRuns
- SynapseIntegrationPipelineRuns
- SynapseIntegrationTriggerRuns
- SynapseRbacOperations

Other

 **New Query 1*** × +


 Try the new UI

 ws-toolchest Select scope  Run Time range: Last 24 hours  Save  Share  New alert rule  Export  Pin to  Format query

Tables Queries Functions ... «


 Search

 Filter  Group by: Resource type

 Collapse all

Favorites

 SynapseIntegrationPipelineRuns

 Synapse Workspaces

```
1 SynapseIntegrationPipelineRuns
2 | where Level == 'Error'
3 | project PipelineName, RunId, Start, End, OperationName, Status, Level
4
5
```

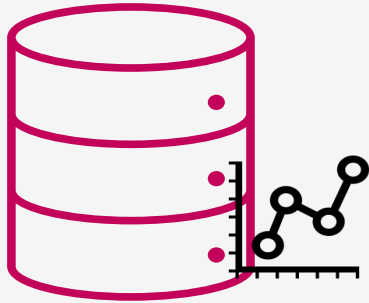
Results Chart

PipelineName	RunId	Start [UTC] ↑↓	End [UTC]	OperationName	Status	Level
> PI_IncrementalUpdate	0df68cc3-6625-4316-b72f-a59...	5/26/2024, 1:20:00.000 PM	5/26/2024, 1:20:08.000 PM	PI_IncrementalUpdate - Failed	Failed	Error
> PI_IncrementalUpdate	0f1c87b1-5643-4001-8076-c42...	5/26/2024, 1:19:00.000 PM	5/26/2024, 1:19:06.000 PM	PI_IncrementalUpdate - Failed	Failed	Error
> PI_IncrementalUpdate	9ff5d2ab-3ff4-4242-aab6-f006...	5/26/2024, 1:15:00.000 PM	5/26/2024, 1:15:09.000 PM	PI_IncrementalUpdate - Failed	Failed	Error
> PI_IncrementalUpdate	70aed7a5-5c0c-4fe3-b4e1-b0a...	5/26/2024, 1:10:00.000 PM	5/26/2024, 1:10:07.000 PM	PI_IncrementalUpdate - Failed	Failed	Error
> PI_IncrementalUpdate	bbfeb238-7e5b-44aa-9ef4-c39...	5/26/2024, 1:05:00.000 PM	5/26/2024, 1:05:09.000 PM	PI_IncrementalUpdate - Failed	Failed	Error
> PI_IncrementalUpdate	0794f231-cba0-4dc0-8b44-958...	5/26/2024, 1:00:00.000 PM	5/26/2024, 1:00:20.000 PM	PI_IncrementalUpdate - Failed	Failed	Error
> PI_IncrementalUpdate	48ea2db9-8e55-4c2a-bca5-e3a...	5/26/2024, 12:55:00.000 PM	5/26/2024, 12:55:07.000 PM	PI_IncrementalUpdate - Failed	Failed	Error
> PI_IncrementalUpdate	3907226b-b3d8-4793-a57c-85...	5/26/2024, 12:50:00.000 PM	5/26/2024, 12:50:08.000 PM	PI_IncrementalUpdate - Failed	Failed	Error
> PI_IncrementalUpdate	da1c849b-abae-4bb2-a603-01...	5/26/2024, 12:45:00.000 PM	5/26/2024, 12:45:06.000 PM	PI_IncrementalUpdate - Failed	Failed	Error
> PI_IncrementalUpdate	7df6bacb-ff6e-4926-9f15-3ab3...	5/26/2024, 12:40:00.000 PM	5/26/2024, 12:40:07.000 PM	PI_IncrementalUpdate - Failed	Failed	Error
> PI_IncrementalUpdate	915bee7f-21d2-46f5-bfbe-a0ec...	5/26/2024, 12:35:00.000 PM	5/26/2024, 12:35:26.000 PM	PI_IncrementalUpdate - Failed	Failed	Error
> PI_IncrementalUpdate	f68bd1e6-43e1-4bfb-b41e-6c9...	5/26/2024, 12:30:00.000 PM	5/26/2024, 12:30:08.000 PM	PI_IncrementalUpdate - Failed	Failed	Error
> PI_IncrementalUpdate	b85c72c9-dcfa-4136-9c14-181...	5/26/2024, 12:25:00.000 PM	5/26/2024, 12:25:10.000 PM	PI_IncrementalUpdate - Failed	Failed	Error
> PI_IncrementalUpdate	042a1027-50e8-4db5-8d33-fa8...	5/26/2024, 12:20:00.000 PM	5/26/2024, 12:20:09.000 PM	PI_IncrementalUpdate - Failed	Failed	Error
> PI_IncrementalUpdate	2f24c6ee-4102-435d-86c3-e7cf...	5/26/2024, 12:15:00.000 PM	5/26/2024, 12:15:06.000 PM	PI_IncrementalUpdate - Failed	Failed	Error
> PI_IncrementalUpdate	c0711e78-5cde-4d4c-bf48-e3af...	5/26/2024, 12:10:00.000 PM	5/26/2024, 12:10:07.000 PM	PI_IncrementalUpdate - Failed	Failed	Error
> PI_IncrementalUpdate	c12d9376-a987-4083-9390-19...	5/26/2024, 12:04:59.000 PM	5/26/2024, 12:05:06.000 PM	PI_IncrementalUpdate - Failed	Failed	Error
> PI_IncrementalUpdate	77d4f5bf-f174-4e07-a505-44f0...	5/26/2024, 12:00:00.000 PM	5/26/2024, 12:00:18.000 PM	PI_IncrementalUpdate - Failed	Failed	Error

Alerts



Metrics



Numerical values

Not free

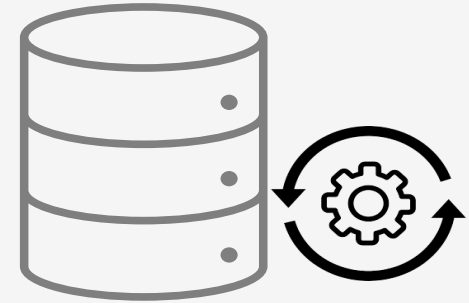
Activity Logs



Operations on
resources

Free

Resource Logs

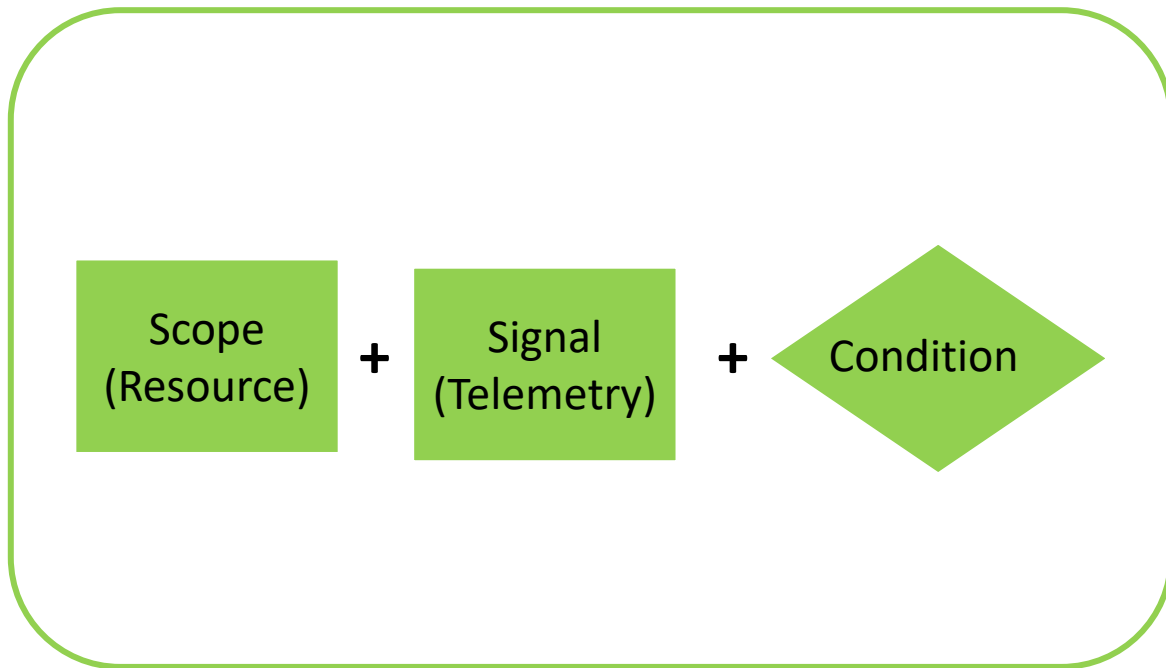


Operations by
resources

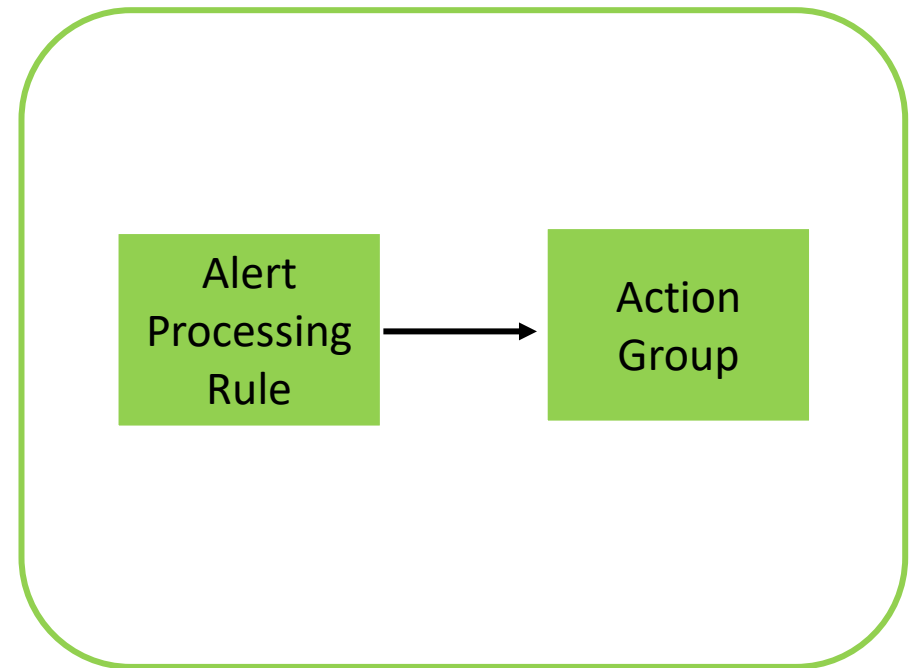
Not free

Alerts

Alert Rule



Alert



Alerts

[Home](#) > [Resource groups](#) > [RG_ToolChest](#) > [Synapse Pipeline Failure](#) >

Edit alert rule

Scope Condition Actions Details Tags Review + save

Configure when the alert rule should trigger by selecting a signal and defining its logic.

Signal name * ⓘ

Custom log search

▼

[See all signals](#)

Define the logic for triggering an alert. Use the chart to view trends in the data. [Learn more](#)

The query to run on this resource's logs. The results returned by this query are used to populate the alert definition below.

Search query * ✔

SynapseIntegrationPipelineRuns

| where Level == 'Error'

| project PipelineName, RunId, Start, End, OperationName, Status, Level

[View result and edit query in Logs](#) ⓘ

Measurement

Select how to summarize the results. We try to detect summarized data from the query results automatically.

Measure ⓘ

Table rows ▼

Aggregation type ⓘ

Count ▼

Aggregation granularity ⓘ

1 minute ▼

Split by dimensions

Use dimensions to monitor specific time series and provide context to the fired alert. Dimensions can be either number or string columns. If you select more than one dimension value, each time series that results from the combination will trigger its own alert and will be charged separately. ⓘ

Dimension name	Operator	Dimension values	Include all future values
<div>Select dimension ▼</div>	<div>= ▼</div>	<div>0 selected ▼</div> <div>Add custom value</div>	<input type="checkbox"/>

Action Group

Home > Resource groups > RG_ToolChest > Action Group Admin >

Action Group Admin



Edit action group

 Save changes  Test action group

Basics

Subscription	<input type="text" value="DemoSubscription"/>
Resource group	<input type="text" value="RG_ToolChest"/>
Region	<input type="text" value="Global"/>
Action group name	<input type="text" value="Action Group Admin"/>
Display name *	<input type="text" value="AG Admin"/> 

Notifications




Notification type	Name	Status	Selected
Email/SMS message/Push/Voice	notify Azure admin	Subscribed	Email  
<input type="text"/>	<input type="text"/>		

Actions

Action type	Name	Selected
<input type="text"/>	<input type="text"/>	

Tags

Tags are name and value pairs that enable you to categorize resources and view consolidated billing by applying the same tag to multiple resources and resource groups. [Learn more about using tags](#)

Name 	Value 	
Environment	: Dev	
Resource Type	: Alert	
<input type="text"/>	: <input type="text"/>	

Notification

Fired:Sev1 Azure Monitor **Alert** Synapse
Pipeline Failure on ws-toolchest (
microsoft.synapse/workspaces) at 5/26/2024
2:21:01 PM

[View the alert in Azure Monitor >](#)

[Investigate >](#)

Summary

Alert name	Synapse Pipeline Failure
Severity	Sev1
Monitor condition	Fired
Affected resource	ws-toolchest
Resource type	microsoft.synapse/workspaces
Resource group	rg_toolchest
Monitoring service	Log Alerts V2
Signal type	Log
Fired time	May 26, 2024 14:21 UTC
Alert ID	181a6301-35e4-1e94-e21b-184889f5000e
Alert rule ID	https://portal.azure.com/#resource/subscriptions/d3a6d337-5d00-48be-8db0-271e755b197b/resourceGroups/RG_ToolChest/providers/microsoft.insights/scheduledqueryrules/Synapse Pipeline Failure

Filtered search results	View query results
Search results	View query results
Search query	SynapseIntegrationPipelineRuns where Level == 'Error' project PipelineName, RunId, Start, End, OperationName, Status, Level
Target resource types	['Microsoft.Synapse/workspaces']
Time aggregation	Count
Operator	GreaterThan
Threshold	0
Metric value	3
Number of violations	1
Number of examined periods	1



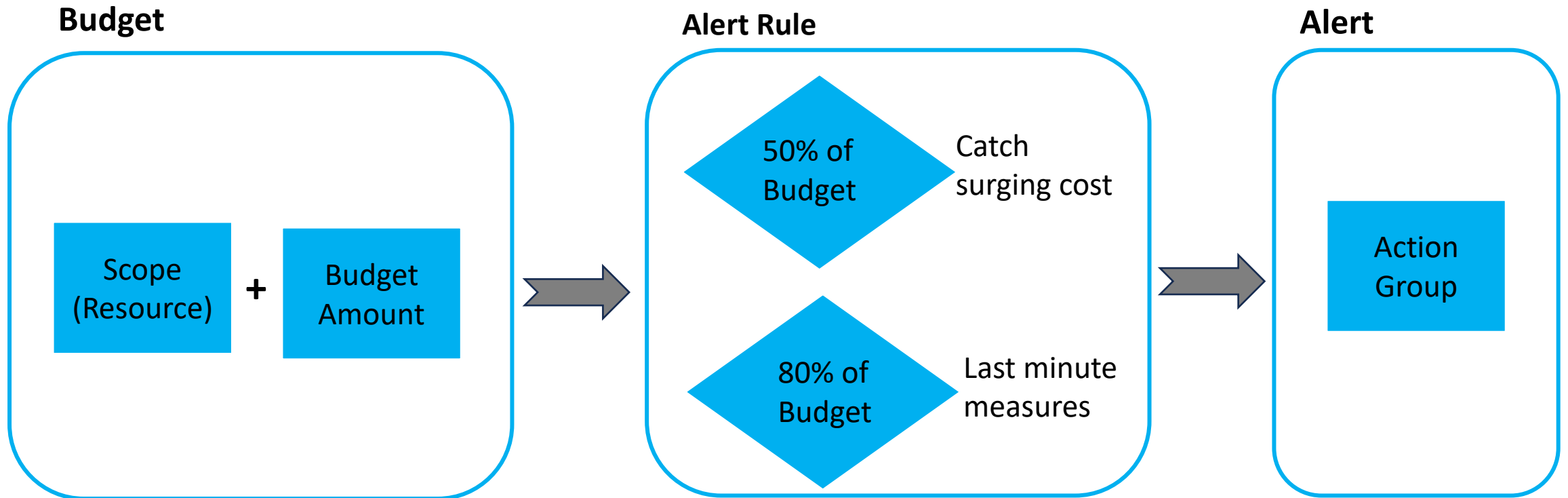
Fail 5: Being careless about cost

A couple of spark pools left too much month at the end of the money

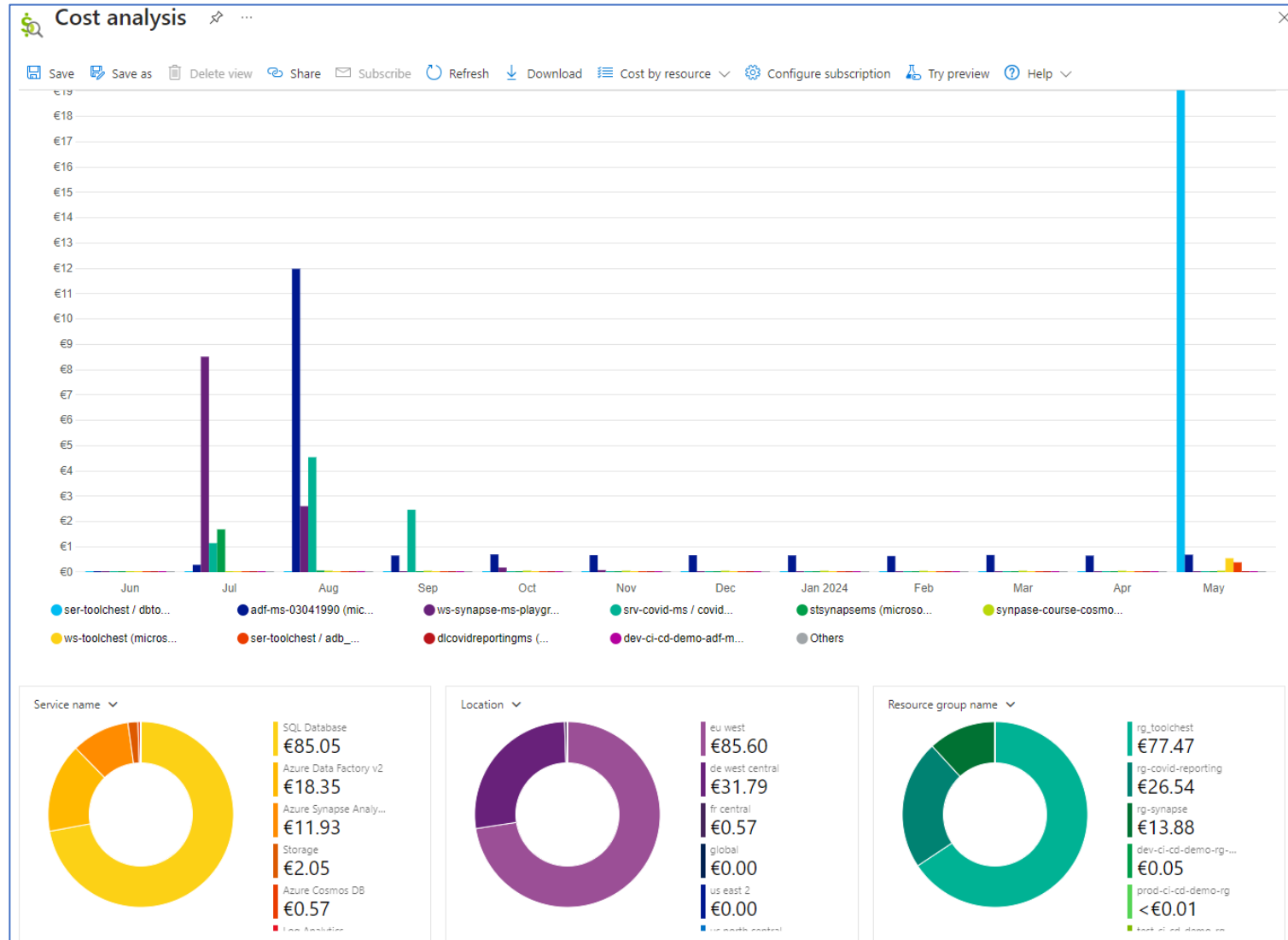
Cost Management



Cost Management



Cost Management



Cost Budget

[Home](#) >

Edit budget

Budget

✓ [Create a budget](#) ② [Set alerts](#)

Create a budget and set alerts to help you monitor your costs.

Budget scoping

The budget you create will be assigned to the selected scope. Use additional filters like resource groups to have your budget monitor with more granularity as needed.

Scope 📌 DemoSubscription

Filters + Add filter

Budget Details

Give your budget a unique name. Select the time window it analyzes during each evaluation period, its expiration date and the amount.

* Name

* Reset period ①

* Creation date ①

* Expiration date ①

Budget Amount

Give your budget amount threshold

Amount (EUR) *

① Suggested budget: €303 based on forecast.

VIEW OF MONTHLY COST DATA

Dec 2023 - Nov 2024

LAST MONTH

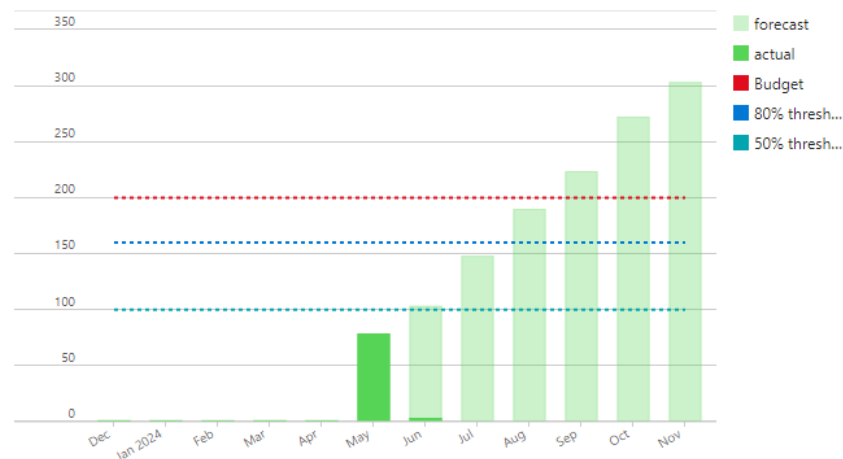
€78

MAX (PAST 7 MONTH)

€78

MAX MONTHLY FORECAST

€303



Cost Alerts

[Home](#) >

Edit budget

Budget

✓ Create a budget

2 Set alerts

Configure alert conditions and send email notifications based on your spend.

*** Alert conditions**

Type	% of budget	Amount (EUR)	Action group
Actual	80	160	Action Group Admin
Actual	50	100	Action Group Admin

Select type

Enter %

-

None

[Manage action group](#)

*** Alert recipients (email)**

Alert recipients (email)

example@email.com

It is recommended to add azure-noreply@microsoft.com to your email allow list to ensure alert mails do not go to your spam folder.

Language preference

Select your preferred language for receiving the alert email for all recipients provided above. Default is the language associated to your enrollment.

Languages *

Default

Your budget evaluation will begin in a few hours. [Learn more](#)

Previous

Save

Notification

Your cost is forecasted to exceed its threshold value for your Azure budget, budget-DemoSubscription

The total spend for your budget, budget-DemoSubscription, is forecasted to reach 367,58 € before the end of the period. This amount exceeds your specified budget threshold of 200,00 €. Please review your budget in the Azure portal and analyze your cost and usage.

[Review budget >](#)

Budget name:	budget-DemoSubscription
Budget start date:	June 1, 2024
Budget type:	Cost
Budget amount:	200,00 €
Notification threshold for forecast alert:	200,00 €
Total forecasted for period:	367,58 €
Alert generation time:	June 1, 2024 1:28 UTC

To see more information about this alert, [view the alert details](#) in the Azure portal. If you need additional help, visit [budgets tutorial](#). If you need help, please [contact support](#).

Tip for Exploring Costs



Use Azure Tags for organizing resources:

- Name-value pairs that can be attached to resources
- No inheritance of tags at the Resource Group level
- Fundamental for proper governance of any environment
- Azure policy can be used to enforce tagging rules

YAGNI

You Ain't Gonna Need It

Thank you for your attention.
Any questions?

Feedback is kindly appreciated

