



10TH ANNIVERSARY JUBILEE EDITION OF THE  
EUROPEAN COLLABORATION SUMMIT

# Develop functional solutions with Azure and Microsoft Graph



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Top 3 win a  
The C64 "Maxi"





# The project

“...we developed a solution implemented with Microsoft Graph in Azure...”





# GovernanceToolkit365.com - Identity and Groups Dashboard

Users

**5353**

Internal

**4174**

Guests

**1179**

Groups

**2784**

Members

**69569**

Teams

**552**

Licensed

**3344**

Deactivated

**539**

Deleted

**702**

M365 Grps

**14**

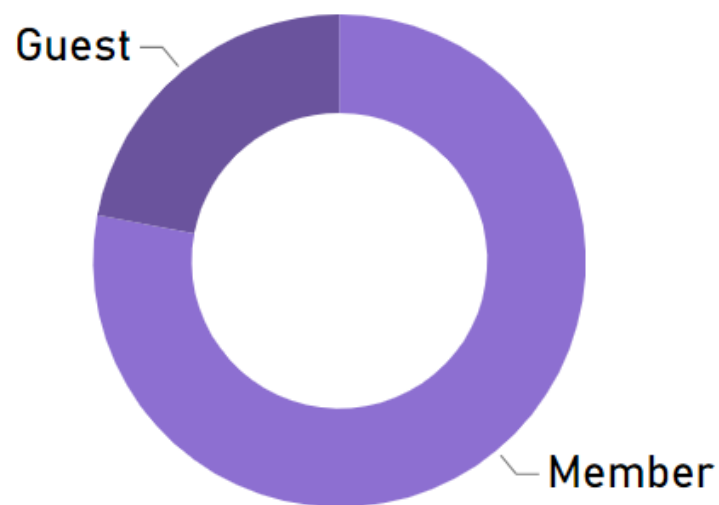
Sec. Grps

**410**

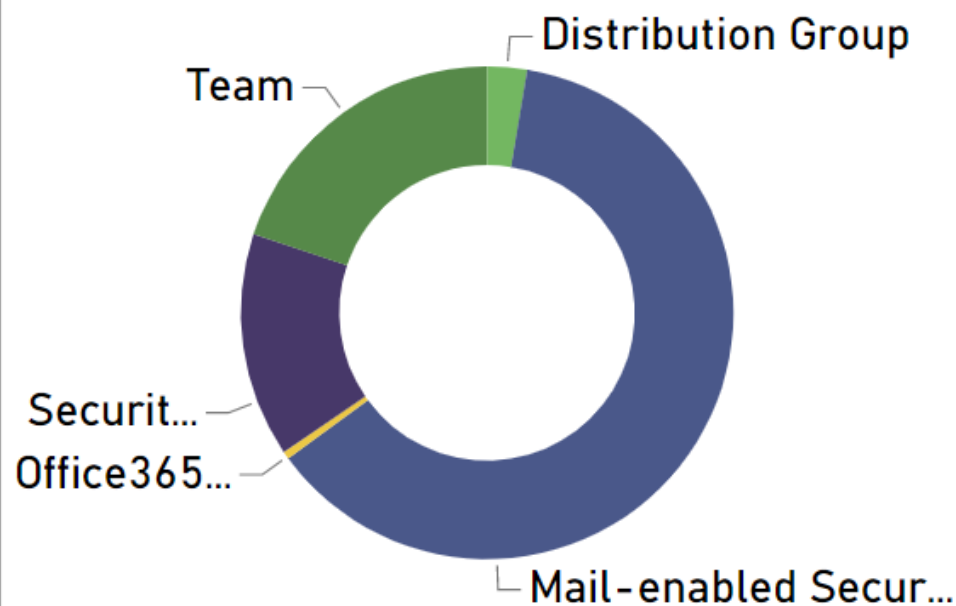
Dist. Grps

**73**

User Types



Group Types





# Tip: Know your data

Get an idea about the data to process





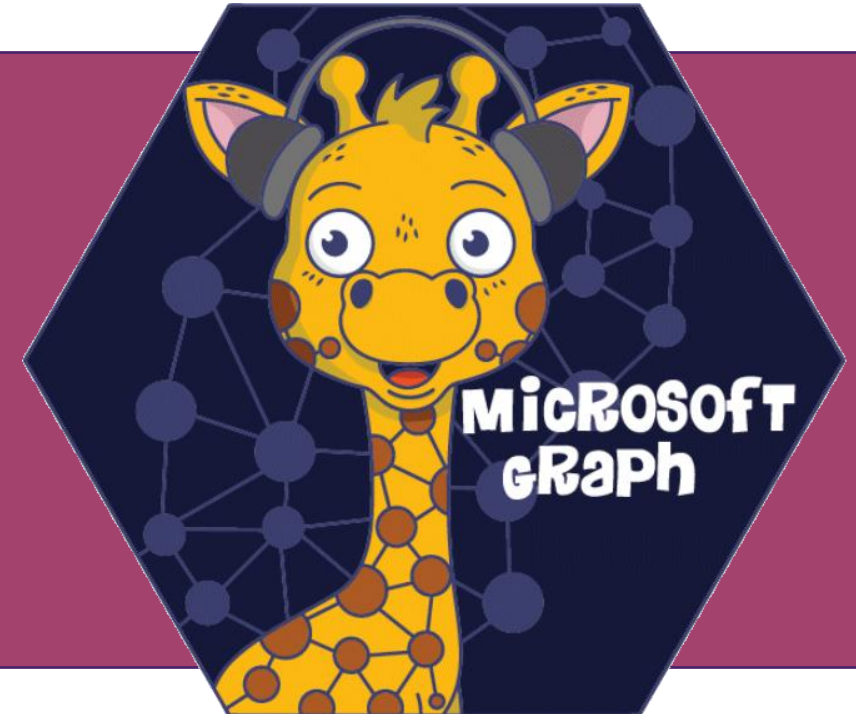


# Get data from M365

Application / Authentication

Microsoft Graph (and more API 's)

<https://aka.ms/ge>



# Many options for automation in Azure...



## Functions

Developing  
APIs/Scheduled Tasks  
PowerShell, C#, ...



## App Services

Developing APIs, UI  
PowerShell, C#, ...  
Containers, ...



## Logic Apps

Visual Workflow Designer  
Scalability and Resilience  
Business Processes



## Automation Accounts

Task automation  
Runbook Automation  
Secure Credential  
Management





# Tip: Select the best service for the job

Azure Functions, Azure Logic Apps





# Tip: How to get ALL data

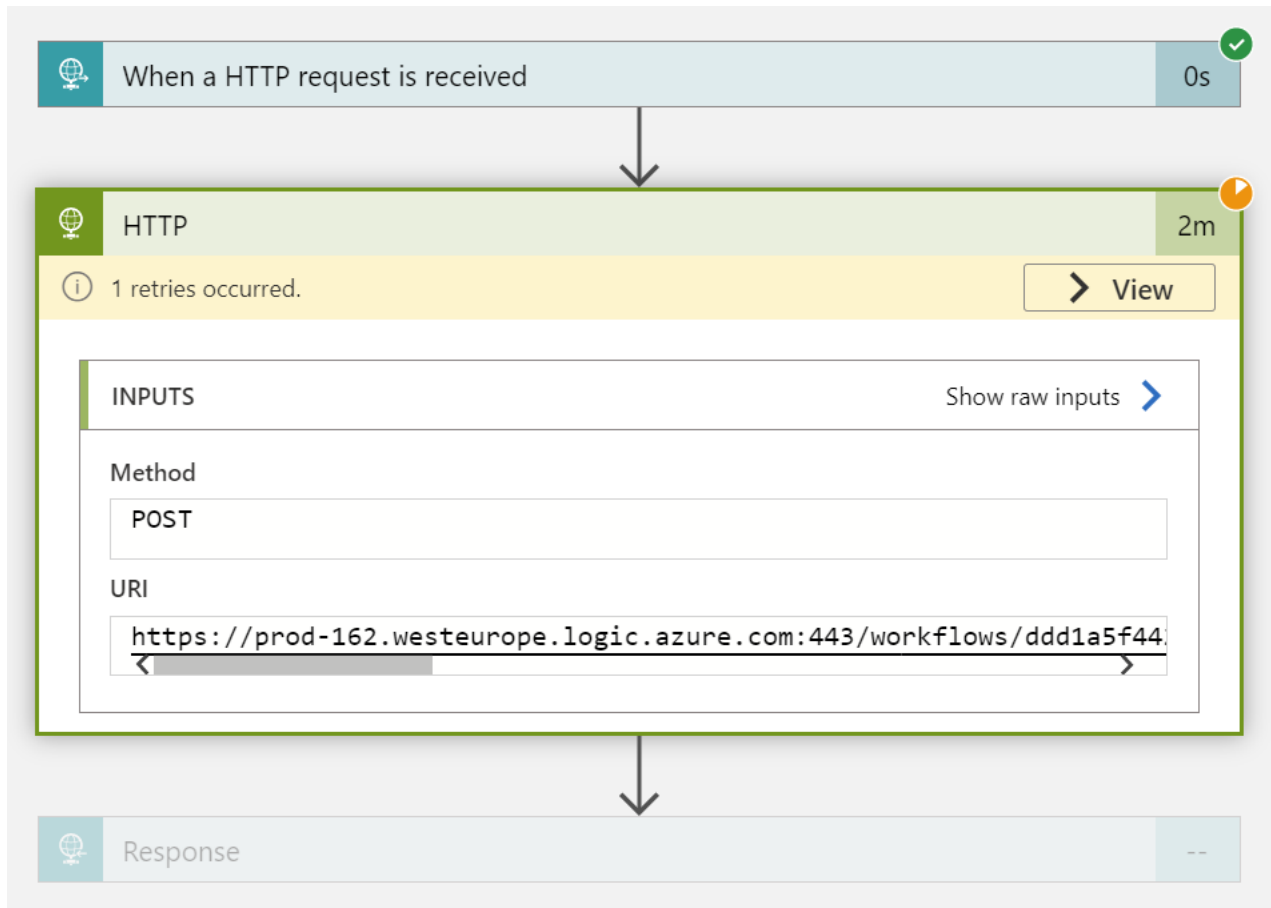
Azure Logic Apps Paging

REST vs. SDK 's vs. Workflow Engines

Costs



# Azure Logic Apps Retry Logic



< Previous      **Retry 1 of 1**      Next >

---

**RETRY**

Duration:  
0 seconds

Start time:  
5/17/2023, 9:47:20 AM

End time:  
5/17/2023, 9:47:20 AM

Status:  
429

Client request ID:  
255433af-b121-479d-b4c0-5488c0b3895c

Service request ID:  
westeurope:24fb8319-fe52-488d-95ae-19b2ecd9...

# Azure Logic Apps Retry Logic

The screenshot displays an Azure Logic App workflow. The top step, 'When a HTTP request is received', is completed. The subsequent 'HTTP' step is highlighted in green, indicating it is the current step, and shows a status of '2m'. Below this, a yellow banner indicates a '429' status code and '4 retries occurred'. A 'View' button is present next to this message. The 'INPUTS' section shows the request details: Method is 'POST' and URI is 'https://prod-162.westeurope.logic.azure.com:443/workflows/ddd1a5f44'. The 'OUTPUTS' section shows the response details: Status code is '429' and Headers include 'Pragma: no-cache', 'Retry-After: 30', and 'x-ms-workflow-run-id: 0858517289913063966299560...'. A '10' logo is visible in the top right corner.

When a HTTP request is received 0s

HTTP 2m

429. 4 retries occurred. View

**INPUTS** Show raw inputs >

Method

POST

URI

https://prod-162.westeurope.logic.azure.com:443/workflows/ddd1a5f44

**OUTPUTS** Show raw outputs >

Status code

429

Headers

Key	Value
Pragma	no-cache
Retry-After	30
x-ms-workflow-run-id	0858517289913063966299560...

ACTUAL COST (EUR ONLY) ⓘ

FORECAST: CHART VIEW ON ⓘ

BUDGET: COST-ALERT-100

€13.63 ▾

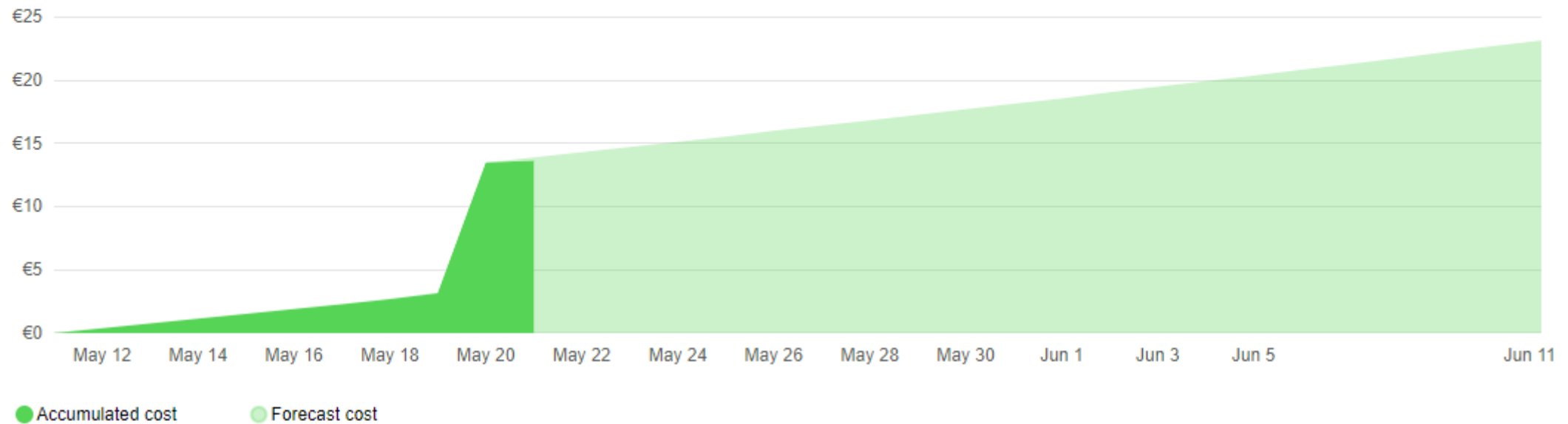
€23.16 ▾

€100 / ▾

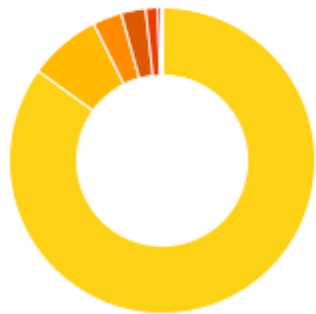
Group by: None ▾

Granularity: Accumulated ▾

Area ▾

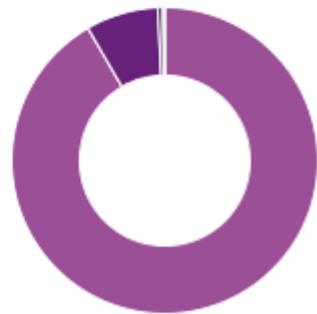


Service name ▾



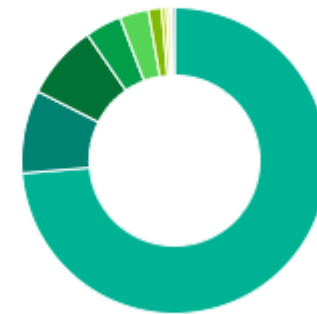
Logic Apps	€11.58
Virtual Network	€1.04
Azure Monitor	€0.42
Log Analytics	€0.35
Advanced Threat Pr...	€0.17
Storage	

Location ▾



EU West	€12.49
US West 2	€1.04
Unassigned	€0.07
US West	€0.02
EU North	€0.01

Resource group name ▾



rg-collabsummit	€10.04
rg-secureapps	€1.20
rg-gt365	€1.08
rg-automationacco...	€0.52
rg-mec	€0.42
rg-265-traitor	



# Tip: Get all data in Az Func?

Azure Functions in what mode  
Durable Functions / Queues for the rescue

Scale  
Cold Start behavior  
Service Limits  
Cost





# Azure Functions hosting options



## Consumption plan



Pay only when your functions are running.

Scales automatically, even during periods of high load.

Default plan for most function apps.

## Premium plan



Automatically scales based on demand using pre-warmed workers.

No delay after being idle.

Runs on more powerful instances.

When function apps run continuously, or nearly continuously.

## Dedicated (App Service) plan



Run your functions within an App Service plan at regular App Service plan rates.

Predictive scaling and costs are required.

# Function app timeout duration

Plan	Default	Maximum <sup>1</sup>
Consumption plan	5	10
Premium plan	30 <sup>2</sup>	Unlimited
Dedicated plan	30 <sup>2</sup>	Unlimited

<sup>1</sup> Regardless of the function app timeout setting, 230 seconds (<4 min) is the maximum amount of time that an HTTP triggered function can take to respond to a request.

This is because of the default idle timeout of Azure Load Balancer.

For longer processing times, consider using the Durable Functions async pattern or defer the actual work and return an immediate response.

# New: Change the Function App plan

Home > Function App > GetUserCollabSummit

## GetUserCollabSummit | Change App Service plan

Function App

app

Diagnose and solve problems

**Functions**

- App keys
- App files

**Settings**

- Configuration
- Application Insights
- Scale up (App Service plan)
- Scale out

**App Service plan**

- App Service plan
- Change App Service plan**

**Development Tools**

- App Service Editor (Preview)
- Extensions

**Monitoring**

- App Service logs

**Automation**

- Tasks (preview)

### Change App Service plan

Changing the plan that your app is hosted on a single plan which allows them to share machine which allows them to be scaled separately for i of down time associated with changing your App

**CURRENT PLAN DETAILS**

App Service plan  
ASP-RGCollabSummit-9de6

**DESTINATION PLAN DETAILS**

Some plans may not show up due to resource

Plan type  
Consumption (Serverless)

App Service plan \*  
(New) ASP-GetUserCollabSummit-8b...  
[Create new](#)

'ASP-RGCollabSummit-9de6' will be unus 8b90'. Delete 'ASP-RGCollabSummit-9de6'

OK

Consumption (Serverless)  
Function Premium

New:  
Change the  
Function App  
plan

Costs:  
EP1 ~0,15€  
/vCPU hour  
~110€/month

The screenshot shows the 'Spec Picker' interface for Azure Function App plans. The left sidebar contains navigation links: Home, Functions, App Service, Settings, Core, App, Scale, App Service, App, Change, Development, App, Extension, Monitoring, App, Automation, and Task. The main content area is titled 'Spec Picker' and features three tabs: 'Dev / Test' (For less demanding workloads), 'Production' (For most production workloads, highlighted with a dashed blue border), and 'Isolated' (Advanced networking and scale). Below the tabs, a warning message states: 'Some SKUs might not be available in your region.' The 'Recommended pricing tiers' section displays three options: EP1 (210 total ACU, 3.5 GB memory, Dv2-Series compute equivalent), EP2 (420 total ACU, 7 GB memory, Dv2-Series compute equivalent), and EP3 (840 total ACU, 14 GB memory, Dv2-Series compute equivalent). The EP1 tier is highlighted with a blue border. The 'Included features' section lists: Rapid scale (Scale out function apps based on event trigger), Virtual Network Integration (Connect to a virtual network), High Density (Efficiently share an App Service plan across multiple function apps), and Custom domains / SSL (Configure and purchase custom domains with SNI and IP SSL bindings). The 'Included hardware' section lists: Azure Compute Units (ACU) (Dedicated compute resources used to run applications deployed in the App Service Plan. [Learn more](#)) and Memory (Memory per instance available to run applications deployed and running in the App Service plan.). An 'Apply' button is located at the bottom right.

Home

# Spec Picker

Dev / Test  
For less demanding workloads

Production  
For most production workloads

Isolated  
Advanced networking and scale

Some SKUs might not be available in your region.

## Recommended pricing tiers

Tier	ACU	Memory	Compute Equivalent
EP1	210 total ACU	3.5 GB memory	Dv2-Series compute equivalent
EP2	420 total ACU	7 GB memory	Dv2-Series compute equivalent
EP3	840 total ACU	14 GB memory	Dv2-Series compute equivalent

## Included features

Every app hosted on this App Service plan will have access to these features:

- Rapid scale**  
Scale out function apps based on event trigger.
- Virtual Network Integration**  
Connect to a virtual network.
- High Density**  
Efficiently share an App Service plan across multiple function apps.
- Custom domains / SSL**  
Configure and purchase custom domains with SNI and IP SSL bindings.

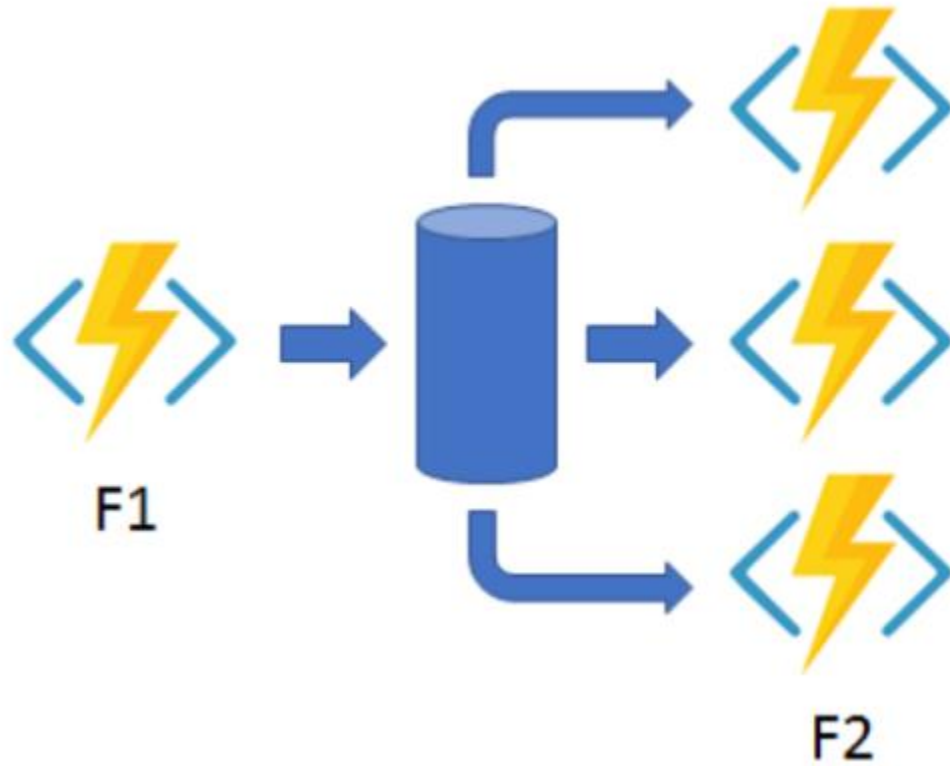
## Included hardware

Every instance of your App Service plan will include the following hardware configuration:

- Azure Compute Units (ACU)**  
Dedicated compute resources used to run applications deployed in the App Service Plan. [Learn more](#)
- Memory**  
Memory per instance available to run applications deployed and running in the App Service plan.

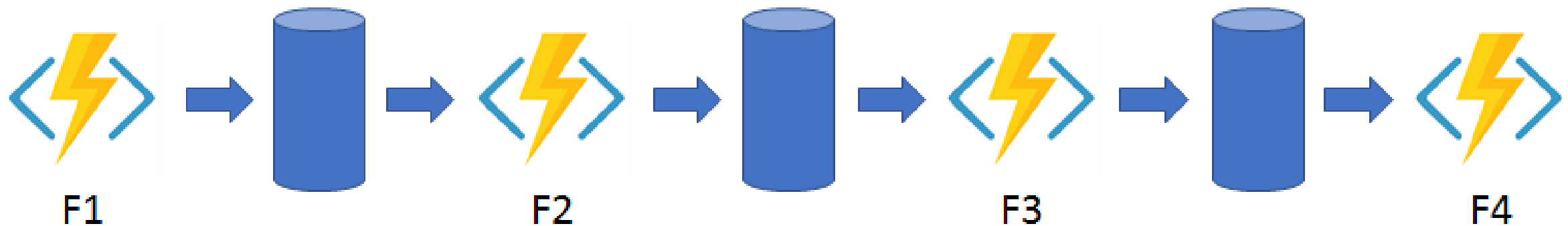
Apply

# Azure Functions Fan out (Consumption)



Fire  
and forget...

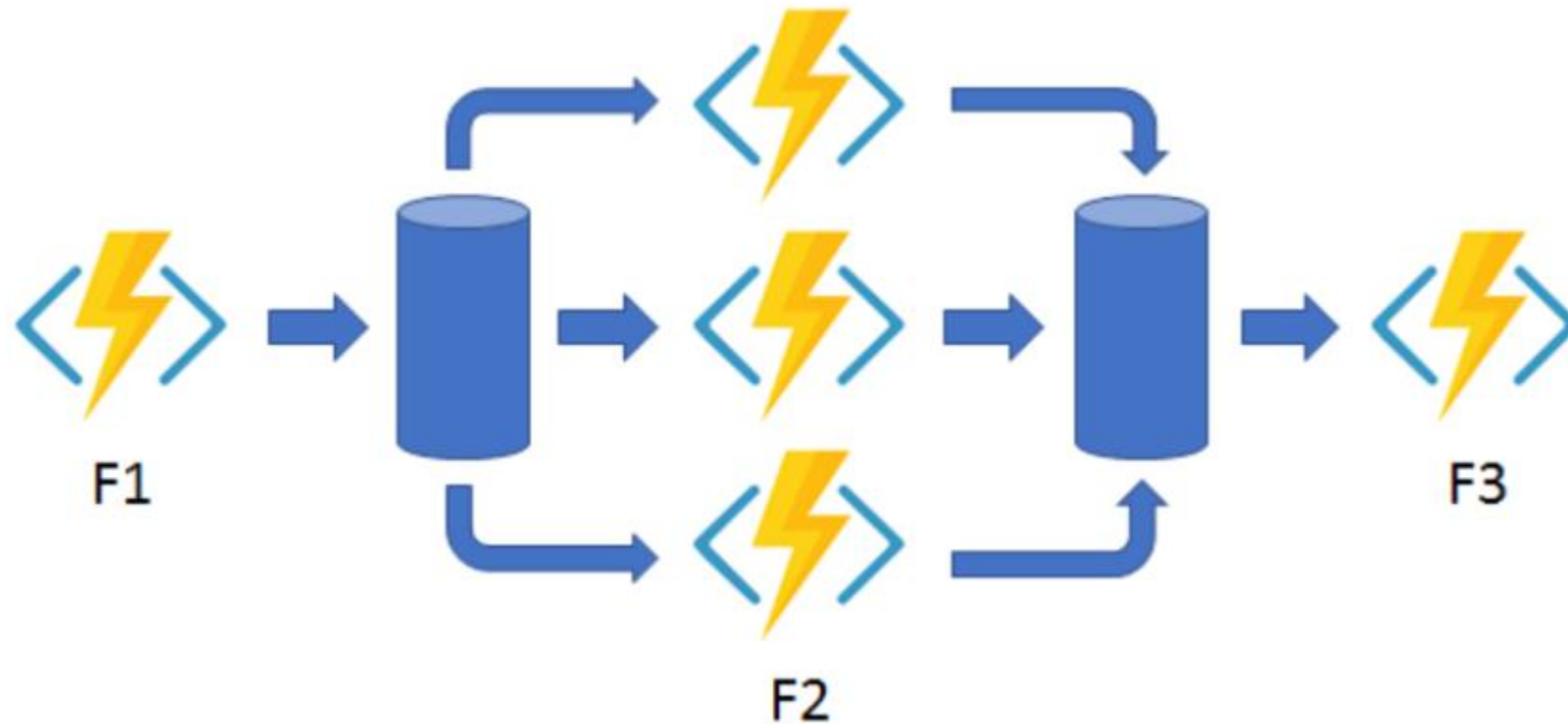
# Durable Azure Functions with Function chaining



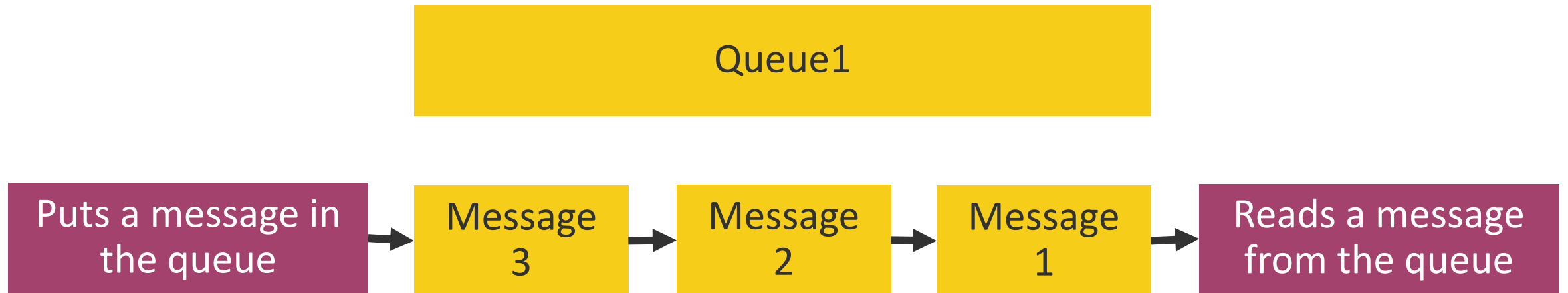
<https://learn.microsoft.com/en-us/azure/azure-functions/durable/durable-functions-overview?tabs=csharp-inproc#chaining>



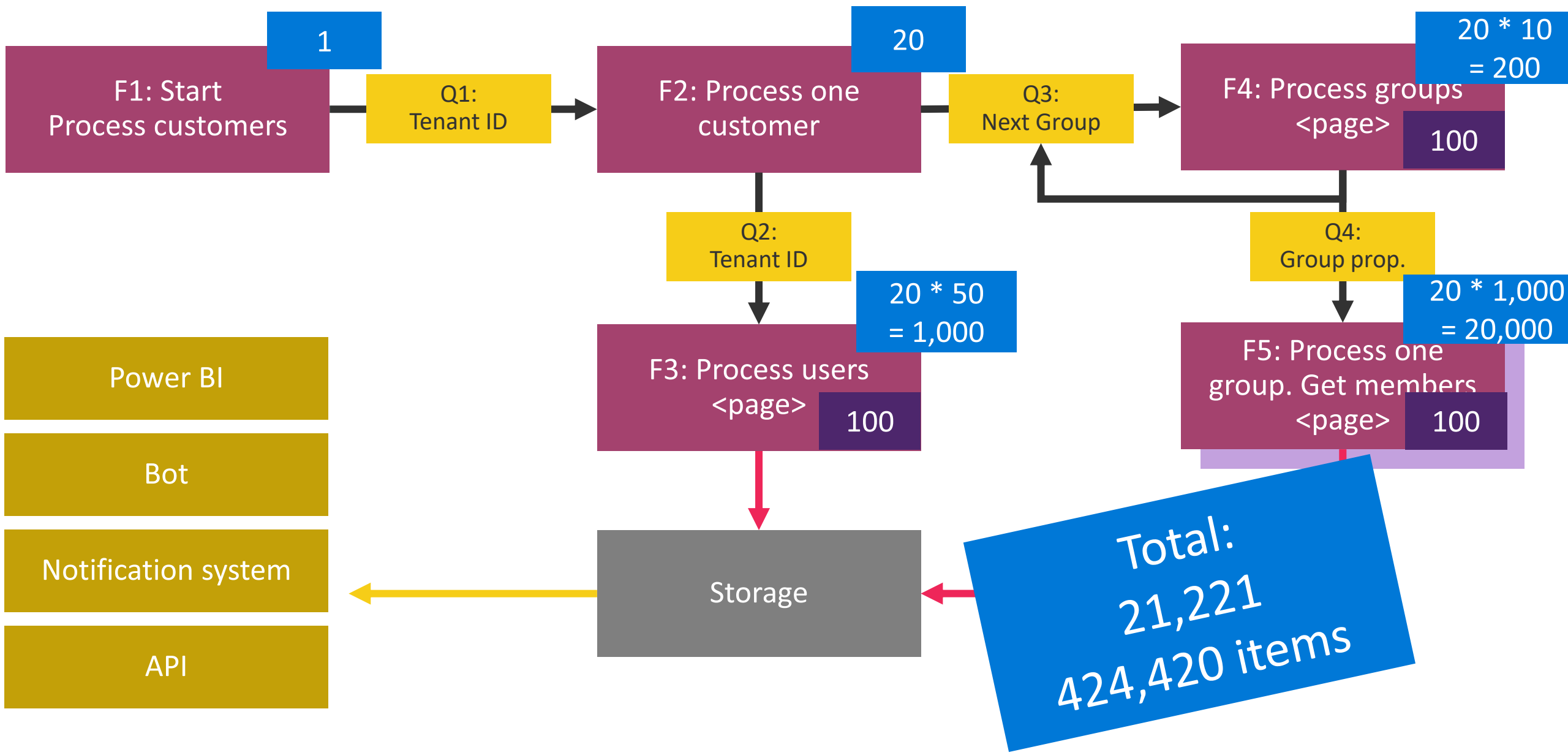
# Durable Azure Functions with Fan out



# Decompose functions & use queues



Requests: 20 customers, 5000 users, 1000 groups





# (Durable) Azure Function

Demo





# Azure Function using Queues

Demo



# Tip: Az Func: Consumer <> Dedicated <> App Svc

Consumer plan: Max. 600 HTTP Requests in parallel





# Service limits

Resource	Consumption plan	Premium plan	Dedicated plan	ASE	Kubernetes
Default timeout duration (min)	5	30	30 <sup>1</sup>	30	30
Max timeout duration (min)	10	unbounded <sup>7</sup>	unbounded <sup>2</sup>	unbounded	unbounded
Max outbound connections (per instance)	600 active (1200 total)	unbounded	unbounded	unbounded	unbounded
Max request size (MB) <sup>3</sup>	100	100	100	100	Depends on cluster



# Tip: Developers, expect errors

HTTP 200 ?

Graph Proxy



505-http-version-not-supported

502-bad-gateway

408-request-timeout

405-method-not-allowed

406-not-acceptable

404-not-found

403-forbidden

400-bad-request

301-moved-permanently

500-internal-server-error

429-too-many-requests

401-unauthorized

302-found-(moved-temporarily)

503-service-unavailable

503-service-temporarily-unavailable

504-gateway-timeout

407-proxy-authentication-required

# Download the Graph Proxy CLI

- Download from <https://github.com/microsoftgraph/msgraph-developer-proxy/releases/tag/v0.7.0>
- Configure mgdprc.json
- Run mgdp.exe

```

request GET https://graph.microsoft.com/v1.0/users?$top=5
warning  To help Microsoft investigate errors, to each request to Microsoft Graph
         add the client-request-id header with a unique GUID.
         More info at https://aka.ms/graph/proxy/guidance/client-request-id
chaos    GET https://graph.microsoft.com/v1.0/users?$top=5
         500 InternalServerError
         GET https://graph.microsoft.com/v1.0/users?$top=5

```

```

PS C:\Repo\Session\AzureAndGraph\Helpers> Get-mguser -Top 5
Get-mguser : Some error was generated by the proxy.
At line:1 char:1
+ Get-mguser -Top 5
+ ~~~~~
+ CategoryInfo          : InvalidOperation: ({{ ConsistencyLe...ndProperty = }}:<>f__AnonymousType62`8) [Get-MgUser_List1], RestException`1
+ FullyQualifiedErrorId : Internal Server Error,Microsoft.Graph.PowerShell.Cmdlets.GetMgUser_List1

```

# Tip: Build resilient production apps with Microsoft Graph

AURUM, Wednesday, 14:55

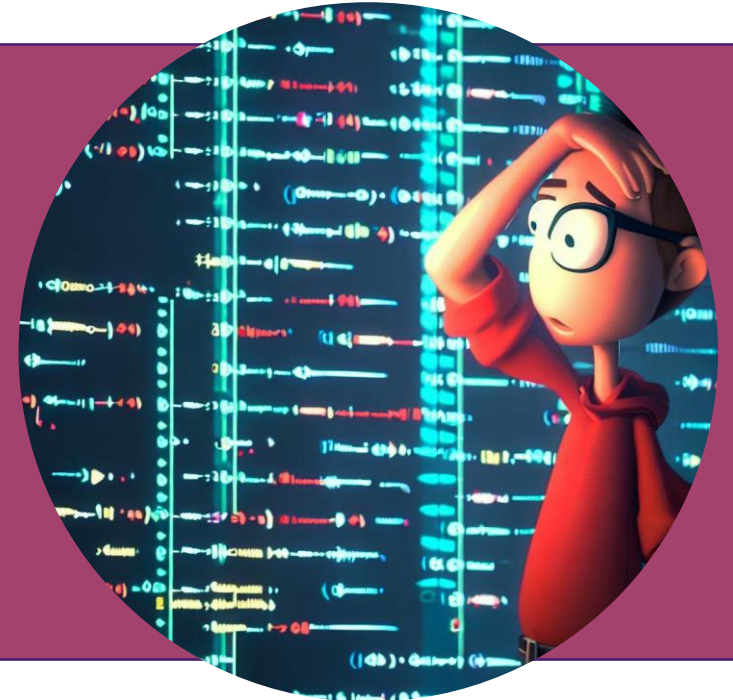
Waldek Mastykarz, Gavin Barron





# Tip: Use Azure Monitor

Use Log Analytics and alerts to find failed operations in your apps





# Azure Monitor - KQL

AzureDiagnostics

```
| where TimeGenerated > ago(1d)  
| where resource_resourceGroupName_s == "RG-CollabSummit"  
| where Category == "WorkflowRuntime"  
| where resource_workflowName_s == "GetUsers"  
| where status_s == "Failed"  
| order by TimeGenerated desc
```



# Monitor alerts

Home > Monitor

## Monitor | Alerts ✦ ...

Microsoft

- Overview
- Activity log
- Alerts**
- Metrics
- Logs
- Change Analysis
- Service health
- Workbooks
- Insights
  - Applications
  - Virtual Machines

+ Create ! Alert rules ⚡ Action groups 📋 Alert processing rules ≡ Columns 🔄 Refresh ↓ Export to CSV 🔗 Open query | ✓ Change user response | 🗣️ Feedback

Directory : **tpe5**

Time range : **Past 24 hours**

Alert condition : **Fired** ✕

Severity : **all** ✕

+ Add filter

Total alerts	Critical	Error	Warning	Informational	Verbose	No grouping ▼	
5	0	5	0	0	0		
Name ↑↓	Severity ↑↓	Affected resource ↑↓	Alert condition ↑↓	User response ↑↓	Fire time ↑↓		
<input type="checkbox"/> <a href="#">Error</a>	1 - Error	response (getusers/0858...	Fired	New	5/23/2023, 7:21 AM	...	
<input type="checkbox"/> <a href="#">Error</a>	1 - Error	08585167877501032847...	Fired	New	5/23/2023, 7:21 AM	...	
<input type="checkbox"/> <a href="#">Error</a>	1 - Error	08585167879250088351...	Fired	New	5/23/2023, 7:21 AM	...	
<input type="checkbox"/> <a href="#">Error</a>	1 - Error	response (getusers/0858...	Fired	New	5/23/2023, 7:21 AM	...	
<input type="checkbox"/> <a href="#">Error</a>	1 - Error	08585167877122742908...	Fired	New	5/23/2023, 7:21 AM	...	

# Some resources

- Azure Functions hosting options, limits & more  
<https://learn.microsoft.com/en-us/azure/azure-functions/functions-overview>  
<https://learn.microsoft.com/en-us/azure/azure-functions/functions-scale>
- Azure Queue storage trigger for Azure Functions  
<https://learn.microsoft.com/en-us/azure/azure-functions/functions-bindings-storage-queue-trigger>
- Azure Durable Functions  
<https://learn.microsoft.com/en-us/azure/azure-functions/durable/durable-functions-overview?tabs=csharp-inproc>
- Graph Proxy  
<https://github.com/microsoftgraph/msgraph-developer-proxy>  
<https://learn.microsoft.com/en-us/graph/application-proxy-configure-api?tabs=http>  
<https://www.youtube.com/watch?v=jsXliaZCGqg>
- How to use Microsoft Graph SDK v5 already  
<https://www.thomy.tech/teamsfx-graph-sdk-v5/>
- Governance Toolkit 365 SaaS  
<https://blog.atwork.at/post/GT365-applied-cloud-story>  
<https://governancetoolkit365.com>



# Happy Developer!

Overcome obstacles

Materials in the Run.events app

<https://github.com/tonipohl/AzureAndGraph>



## Premium Technology Partner



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Use CollabCoins  
for Swag!



- 1 Get the app
- 2 Visit sessions and sponsors, rate sessions
- 3 Earn CollabCoins
- 4 Spend CollabCoins on swag and vouchers

Top 3 win a  
The C64 "Maxi"



# THANK YOU ♥

## Questions?



@atwork · Let's connect!

<https://github.com/tonipohl/AzureAndGraph>

