NTT DATA

TŌGŌ

Architecture Overview

November 2023

Agenda

01 Architectural principles

02 Architecture overview

03 Setup recommendations

04 Cloud first

05 Security

06 Extensibility

07 Infrastructure monitoring

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Architectural principles

Principles are general rules and guidelines, intended to be enduring and seldom amended, that inform and support the way in which an organization sets about fulfilling its mission.

Architectural principles

FLEXIBILITY

Business requires flexibility from a Digital Workplace allowing to add new features to support new business needs

STABILITY

A Digital workplace needs to be stable an provide responsiveness to employees

SECURITY

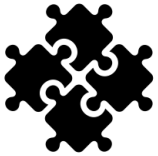
Access to corporate information needs to be secure granting the correct permissions to employees and protecting it from external threats

SCALABILITY

The system needs to be ready to perform under optimal conditions in any present and future usage scenarios

ZERO DOWNTIME DEPLOYMENT

The system needs to be ready to be upgraded without affecting the service delivered



INTEGRATION

Integration with Office 365 products and with customers existing solutions

INFORMATION ARCHITECHTURE

Support to organize Digital Workplace based on the customer organizational structure

Design principles

FLEXIBILITY

Business requires flexibility from a Digital Workplace allowing to add new features to support new business needs

FEATURES

A feature based plug-in solution to allow to include new product or customer functionality

CUSTOMIZABLE BRANDING

The experience could be customized without affecting to the main product features

CUSTOM CARDS

Product cards could be customized to the customer needs

Design principles

STABILITY

A Digital workplace needs to be stable an provide responsiveness to employees

CLOUD FIRST

The solution will be delivered based on reliant cloud services

SHAREPOINT PATTERNS & PRACTICES

Based on defined SharePoint Online patterns & practices

MOBILE FIRST

Solution must be responsive to allow access from mobile devices and performs optimally also in desktop devices

AUTOMATIC DEPLOYMENT

Solution must allow an automatic deployment process to all customers that does not affect business continuity

OFFICE 365

Based on Office 365 digital workplace solution platform which guarantees the required stability

AZURE

Based on MS Azure platform to host the backend services

Design principles

SECURITY

Access to corporate information needs to be secure granting the correct permissions to employees and protecting it from external threats

OFFICE 365

Based on Office 365 authentication & authorization

MICROSOFT ENTRA ID

Based on Microsoft Entra ID authentication and integrated with Office 365 authentication & authorization

Design principles

SCALABILITY

The system needs to be ready to perform under optimal conditions in any present and future usage scenarios

OFFICE 365

Based on Office 365 scalability

AZURE

Based on API Management & APP Service scalability features

Design principles

ZERO DOWNTIME DEPLOYMENT

The system needs to be ready to be upgraded without affecting the service delivered

PROVISIONING API

Provisioning API will take care of the global deployment process & communities provisioning

VERSIONING

All product components front-end and back-end will be versioned and new version will provide backward compatibility

Design principles

INTEGRATION

Integration with Office 365 products and with customers existing solutions

OFFICE 365

Support for out-of-the-box Office 365 products integration (Planner, Teams, Stream,…)

LEGACY SYSTEMS

Allow customer existing or new products integration

SMARTACTIONS

Support to extend out-of-the-box Smart Actions with new actions based on Office 365 or customer solutions

DISCOVERY CARDS

Support to extend out-of-the-box Discovery cards with new actions based on Office 365 or customer solutions

FOLLOW UP CARDS

Support to extend out-of-the-box Follow up cards with new items based on Office 365 or customer solutions

CUSTOMIZABLE REST API

Support to extend TŌGŌ API to provide customized content based on legacy systems

Design principles

INFORMATION ARCHITECTURE

Support to organize Digital Workplace based on the customer organizational structure

COMMUNITY BASED

Communities could be organized hierarchical to support organization structure.

CONTEXT BASED ACCESS

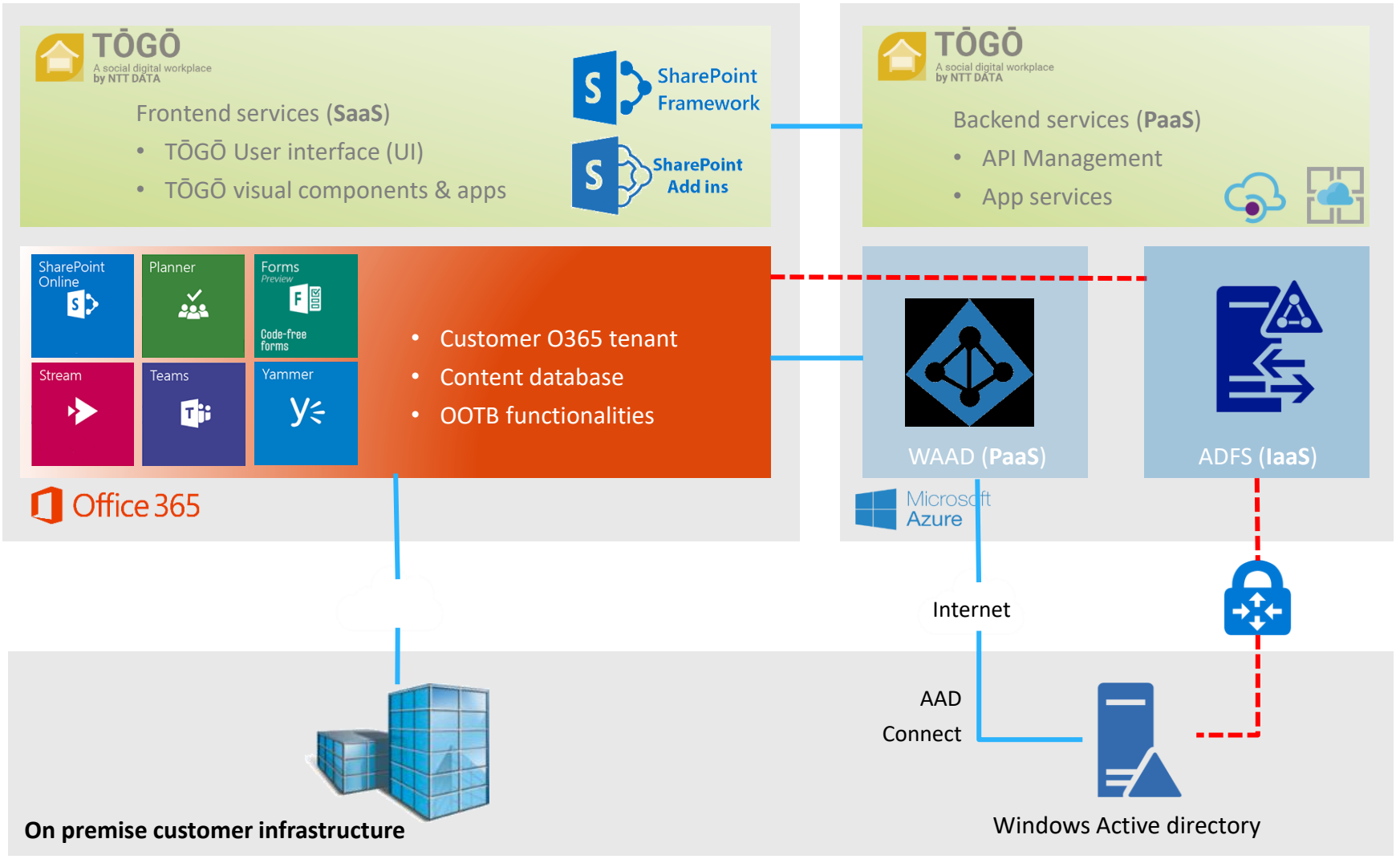
Employees will reach to all information in the Digital Workplace based on the communities where they belong

COMMUNITY HUB

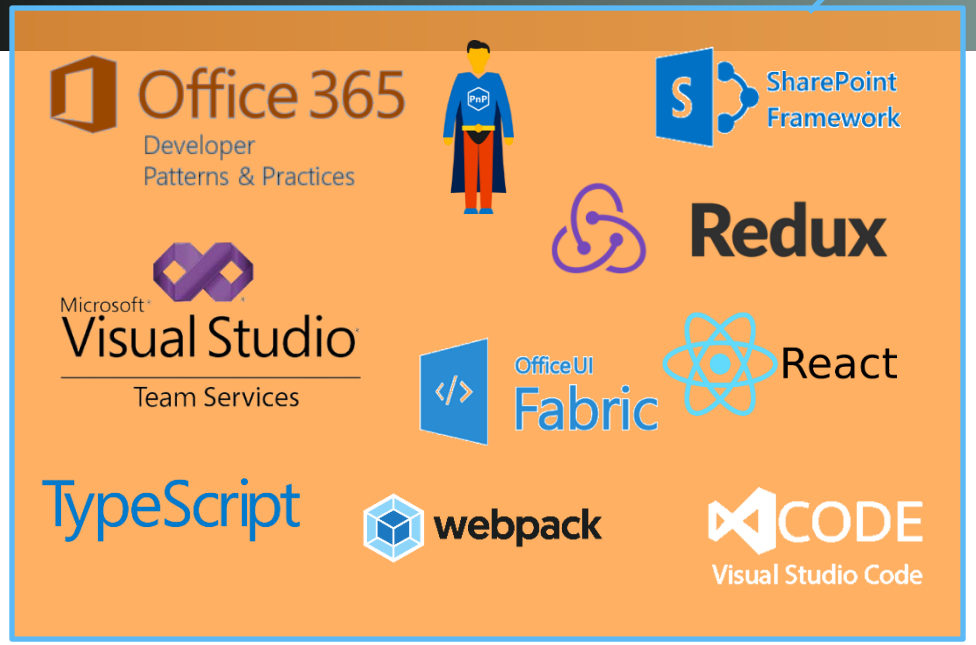
Communities will be able to work as an information hub based on the hierarchical organisation

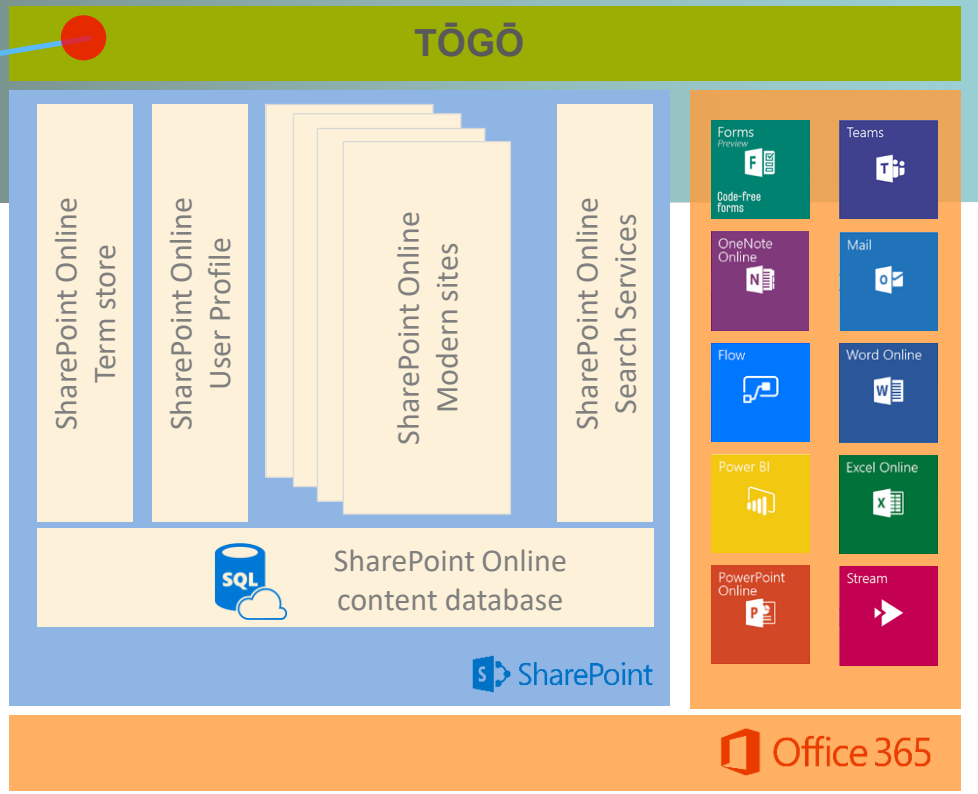
Architectural overview

Overview

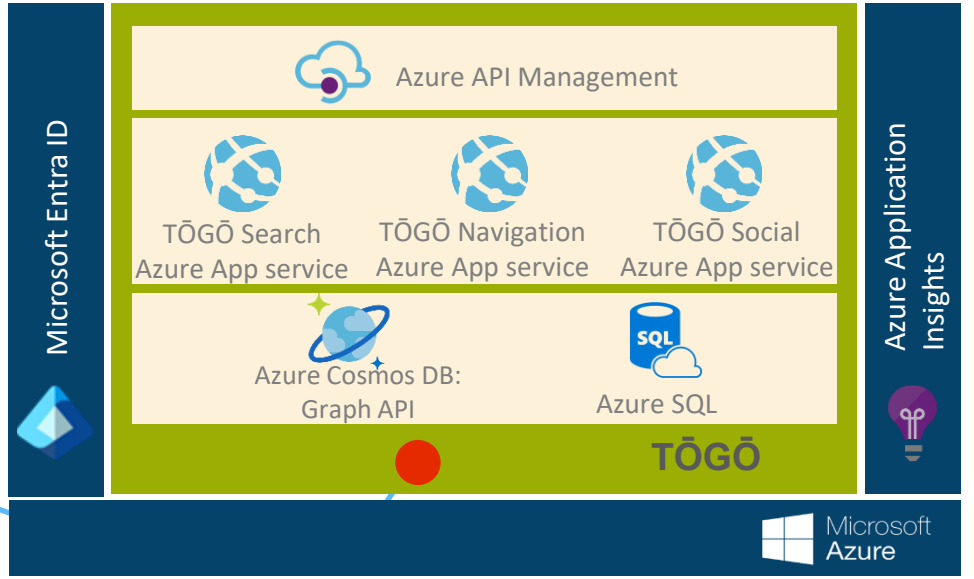

TŌGŌ
A social digital workplace by NTT DATA
Frontend services (SaaS)
• TŌGŌ User interface (UI)
• TŌGŌ visual components & apps
SharePoint Framework
SharePoint Add ins
TŌGŌ
A social digital workplace by NTT DATA
Backend services (PaaS)
• API Management
• App services
SharePoint Online
Planner
Forms
Preview
Code-free forms
Stream
Teams
Yammer
• Customer O365 tenant
• Content database
• OOTB functionalities
Office 365
WAAD (PaaS)
ADFS (IaaS)
Microsoft Azure
Internet
AAD Connect
Windows Active directory
On premise customer infrastructure

Overview

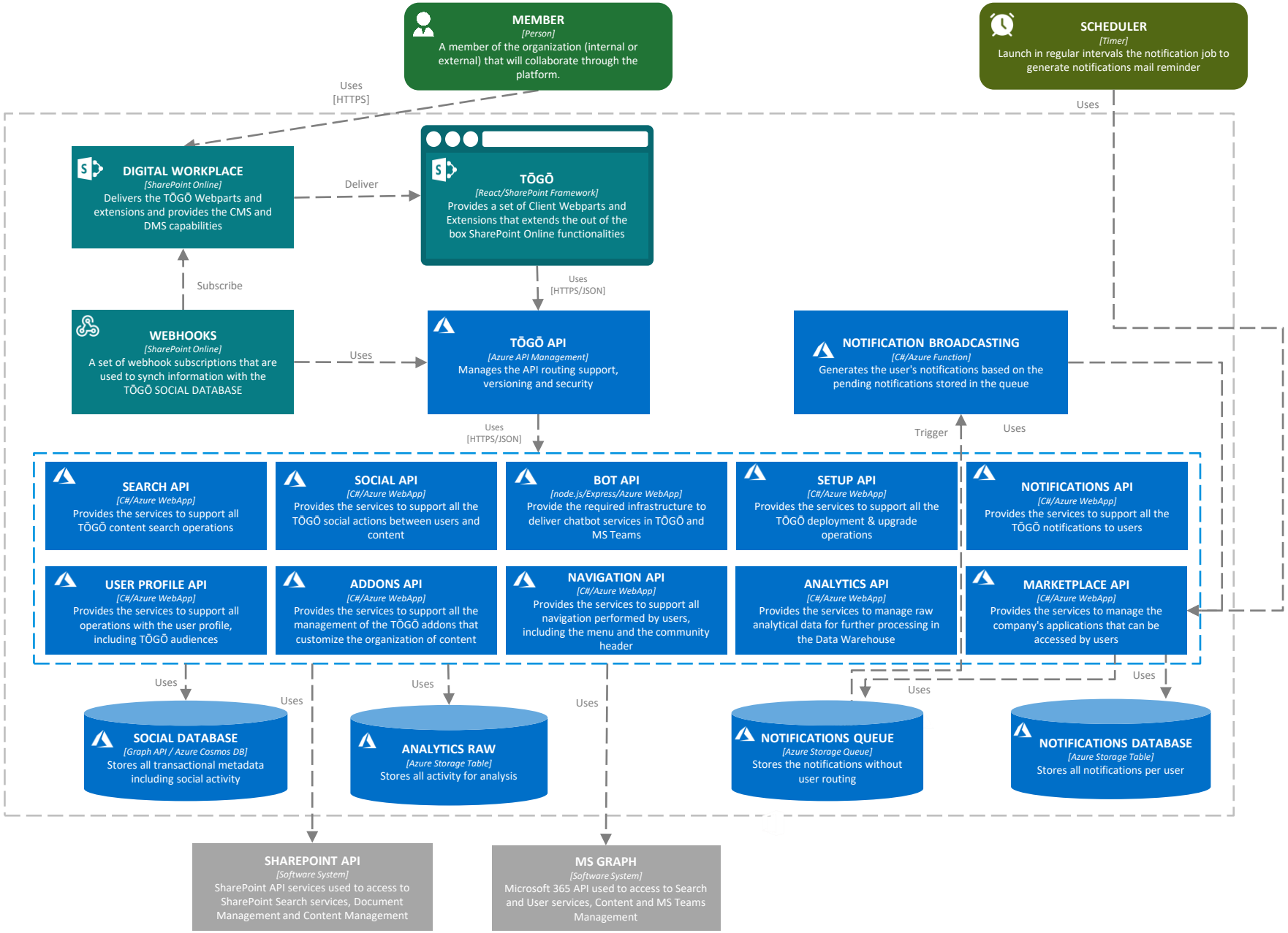

Office 365
Developer
Patterns & Practices
SharePoint
Framework
Redux
Microsoft
Visual Studio
Team Services
Office UI
Fabric
React
TypeScript
webpack
CODE
Visual Studio Code


TŌGŌ
SharePoint Online
Term store
SharePoint Online
User Profile
SharePoint Online
Modern sites
SharePoint Online
Search Services
SharePoint Online
content database
SharePoint
Forms
Preview
Code-free
forms
Teams
OneNote
Online
Mail
Flow
Word Online
Power BI
Excel Online
PowerPoint
Online
Stream
Office 365

Visual
Studio
Microsoft
Visual Studio
Team Services
.NET
Core
Gremlin
Office 365
Developer
Patterns & Practices


Microsoft Entra ID
Azure API Management
TŌGŌ Search
Azure App service
TŌGŌ Navigation
Azure App service
TŌGŌ Social
Azure App service
Azure Cosmos DB:
Graph API
Azure SQL
TŌGŌ
Azure Application
Insights
Microsoft
Azure

Architectural overview



Architectural overview

BACK END

SEARCH API

Is the microservice in charge of managing search center, suggestions and roll up the contents for TŌGŌ dashboards

SOCIAL API

Is the microservice in charge of creating all the social relationships between users and content

MARKETPLACE API

Is the microservice in charge of managing the applications available to users

USER PROFILE API

Is the microservice in charge of maintaining the user profile information.
It also includes the management of TŌGŌ audiences, which allow providing unique experiences to the needs of each employee

ADDONS API

Is the microservice in charge of the maintenance and provisioning of addons to customize TŌGŌ contents

SETUP API

Is the microservice in charge of the deployment & upgrade operations

NOTIFICATIONS API

Is the microservice in charge of notifying users of new content, users and communities they follow

NAVIGATION API

Is the microservice in charge of managing user navigation within the Digital Workplace, including the main and user menu and the community header

ANALYTICS API

Is the microservice in charge of handling all the analytical data for later consumption in the Data Warehouse

Architectural overview

FRONT END

TŌGŌ WEBPARTS & EXTENSIONS

SharePoint Framework based client webparts and extensions that could be used in modern pages.

Contains the Dashboards, Quick Links, Sidebar and other out-of-the-box components logic

TŌGŌ ADDONS

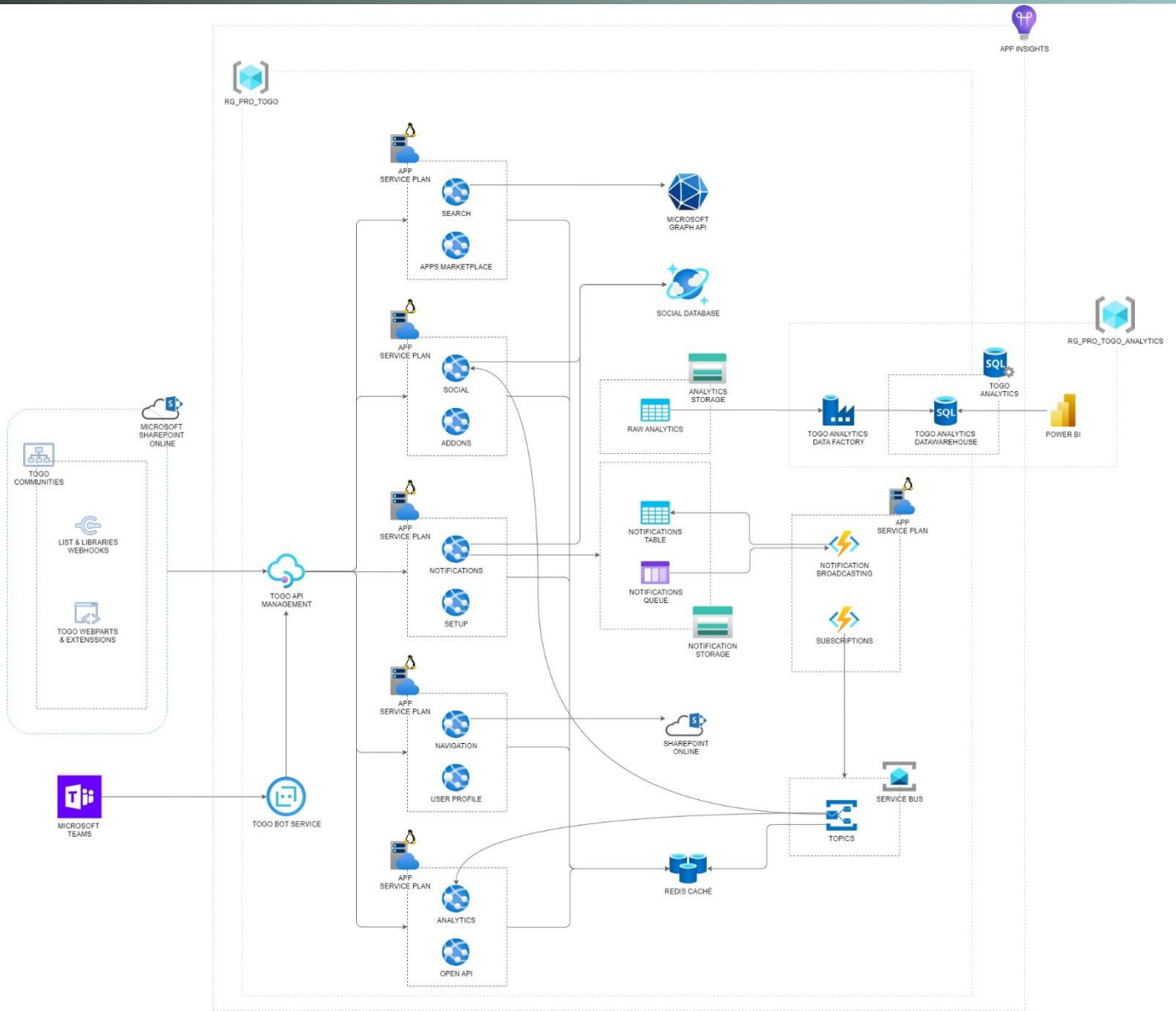
TŌGŌ Addons extends the solution behavior providing custom cards and forms using a low code approach

CUSTOM CARDS

QUICK ACTIONS

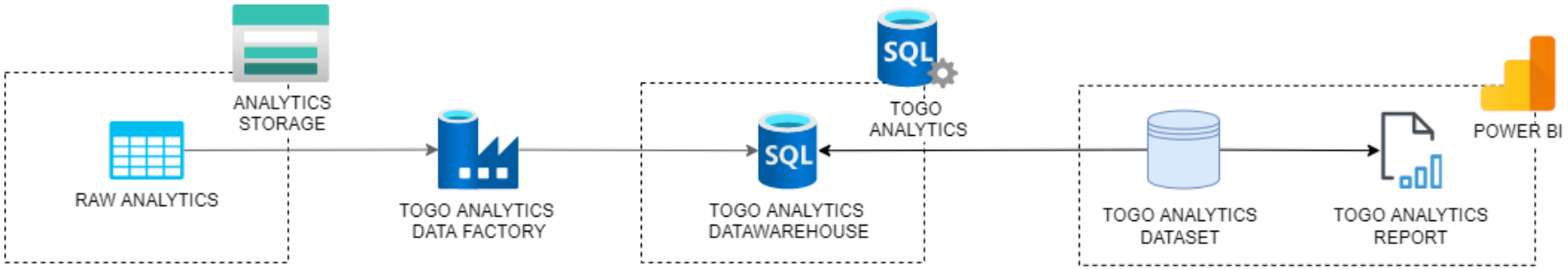
Architectural overview

TŌGŌ CORE - ARCHITECTURE DIAGRAM



Architectural overview

TŌGŌ ANALYTICS - ARCHITECTURE DIAGRAM



Setup recommendations

Setup recommendations

App Service Plans. Auto-Scale Recommendations

For productive environments with heavy loads, it is recommended to create a separate app service plan grouping two app services shown in the previous section.

- Search + Apps Marketplace App Service Plan
- Social + Addons App Service Plan
- Notifications + Setup App Service Plan
- Navigation + User Profile App Service Plan
- Analytics + Open API App Service Plan

This improves scalability of the different microservices of TŌGŌ solution and increases performance as well as resilience of the system

Vertical Scaling Recommendations (Scale Up conditions)

For productive environments, we recommend to start by configuring each app service plan having at least Azure Production **P1V3** machines. These machines provide 8GB of RAM memory as well as 195 ACU.

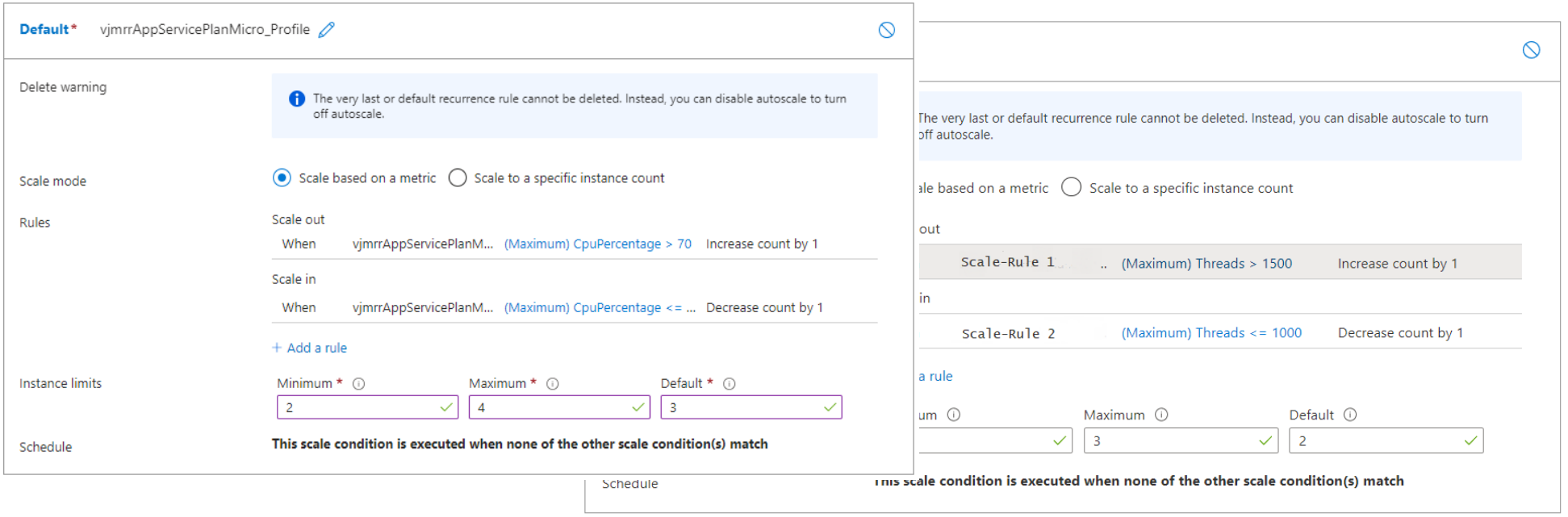
Setup recommendations

Horizontal Scaling Recommendations (Scale Out Conditions)

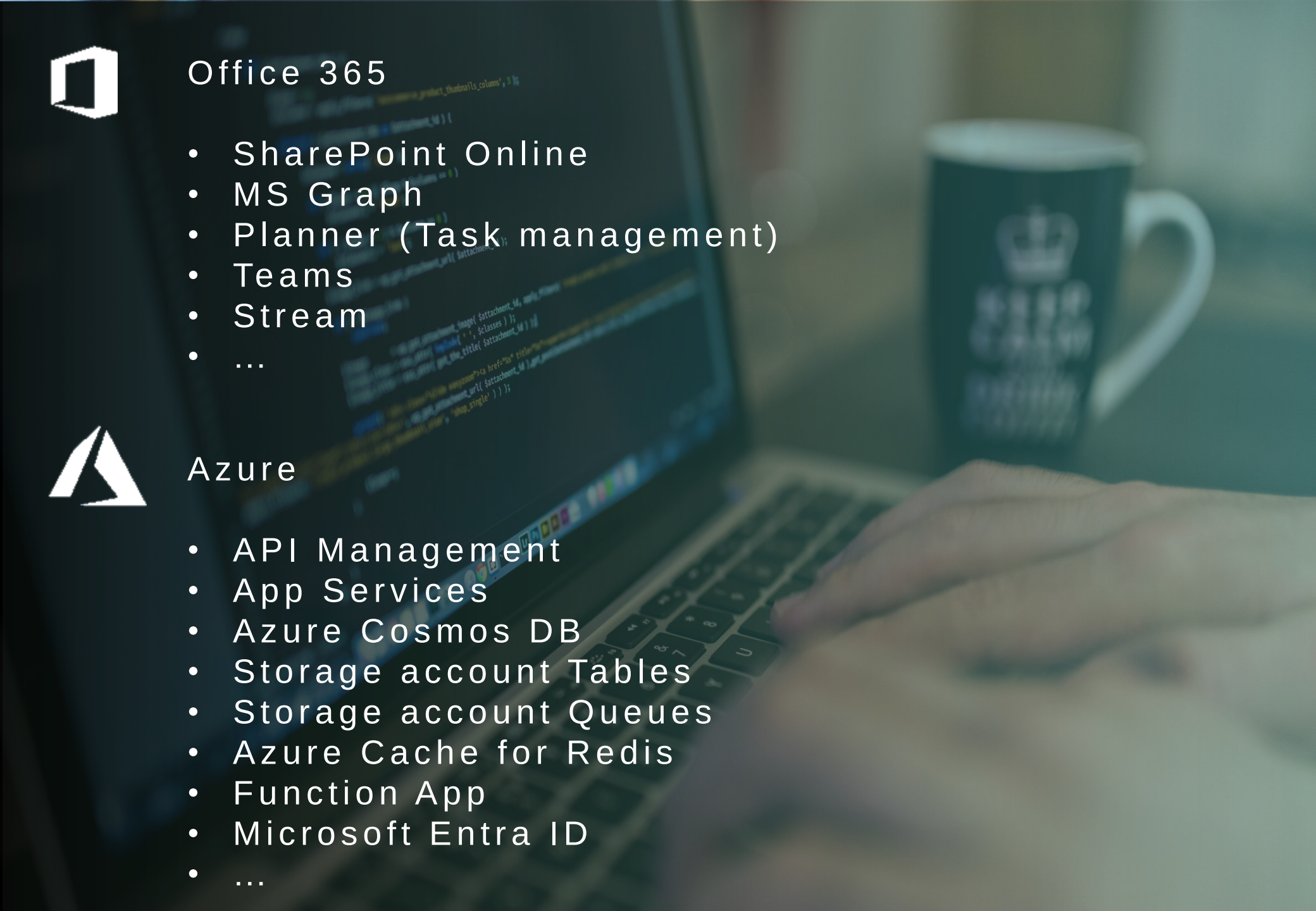
For productive environments, we recommend to enable Azure auto-scaling within each App Service Plan.

Using this feature, you can use multiple metrics to configure in which conditions app service nodes should be switched on/off. There are multiple metrics you can use to configure it: App service plan CPU, App service plan memory, app service thread count, etc.

Based on our experience we recommend to use the maximum **CPU Percentage** or **Thread Count** metric on each service with a default instance count of **2 nodes**. It will be necessary to find the values useful in each case. See the following example of a particular configuration:



Cloud First



Office 365

- SharePoint Online
- MS Graph
- Planner (Task management)
- Teams
- Stream
- ...

Azure

- API Management
- App Services
- Azure Cosmos DB
- Storage account Tables
- Storage account Queues
- Azure Cache for Redis
- Function App
- Microsoft Entra ID
- ...

Security

APIs Security

SECURITY

How the security is implemented, and the content access could be controlled with TŌGŌ

HOW IS THE API SECURED?

AUTHENTICATION ON BEHALF OF

The APIs uses an Office 365 identity token to create a token on behalf of to access securely to Office 365 information

OFFICE 365

Based on Office 365 authentication & authorization and role-based access

MICROSOFT ENTRA ID

Based on Microsoft Entra ID authentication and integrated with Office 365 authentication & authorization

Extensibility

Addons

ADDONS

A set of components that extends TŌGŌ client-side functionality

WHAT CAN I DO WITH APPLICATIONS?

CUSTOM FORMS

Create new Quick actions with custom behavior

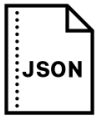
CUSTOM CARDS

Create new card design or replace existing cards with a customized version

CUSTOM CONTENT TYPES

Create new content types and provide forms and card designs for a convenient integration with MS Teams

LOW CODE



JSON

Use JSON parametrization to create custom content types, cards and forms.

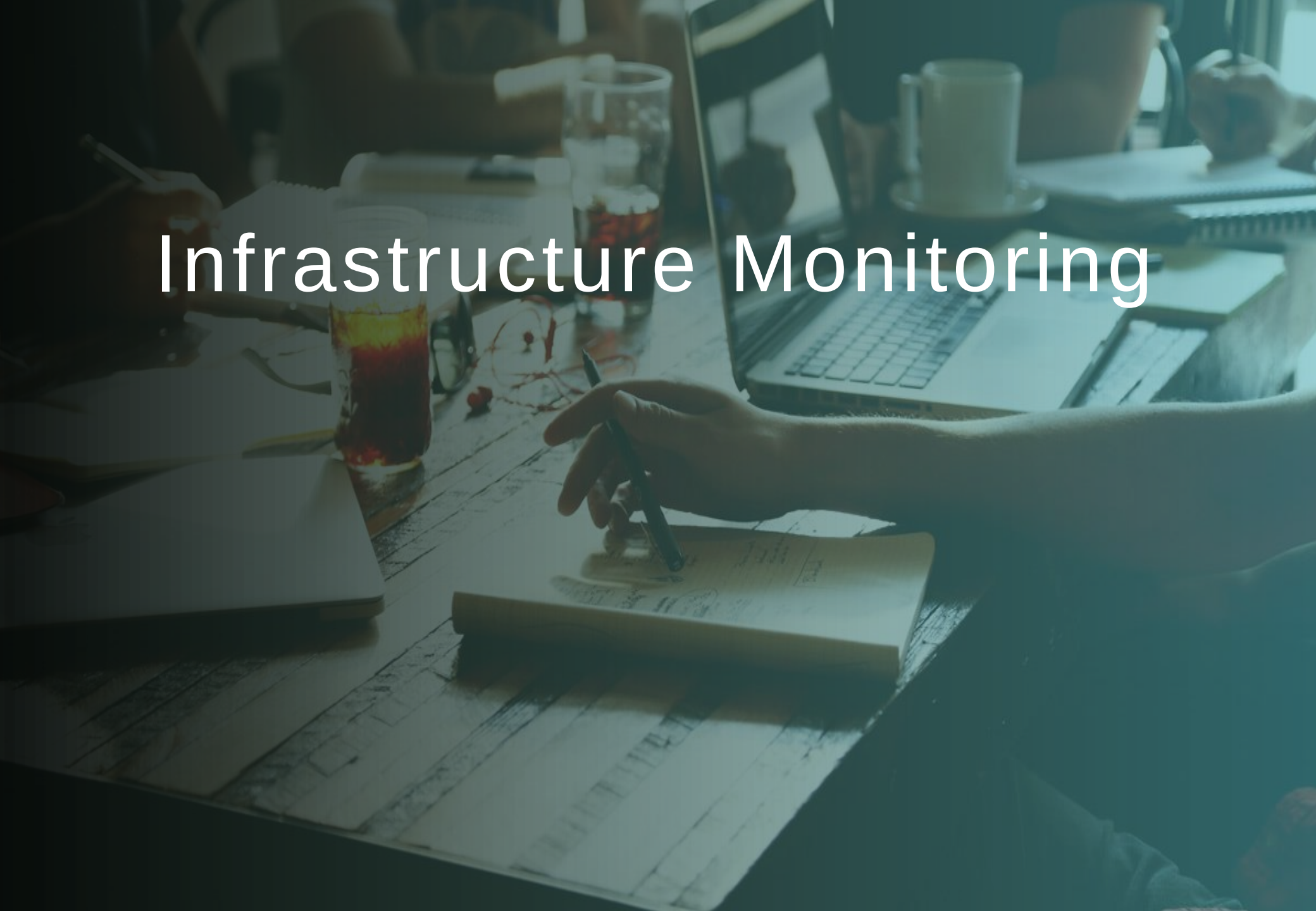
CUSTOM DEVELOPMENT

TYPESCRIPT

Typed superset of JavaScript that compiles in plain JavaScript

REACT

A JavaScript library for building user interfaces based on components


Infrastructure Monitoring

Monitoring M365

For monitoring Microsoft 365 we have the following bunch of tools:

Microsoft 365 Service Health

M365 service health is a page included in M365 admin center where admin users can check the status of Office web services. Find detailed information in the following Microsoft documentation

https://docs.microsoft.com/en-us/microsoft-365/enterprise/view-service-health?view=o365-worldwide

Microsoft 365 alerts and notifications

It is possible to add and configure alerts within M365 service health platform. It is very useful so that certain users can get notified in case there is any problem on Office services without the need of checking it periodically in Service Health page.

The following links have detailed information on this capability and how to configure it:

https://docs.microsoft.com/en-us/microsoft-365/admin/manage/message-center?preserve-view=true&view=o365-worldwide#preferences

https://vmlabblog.com/2020/06/how-to-microsoft-365-services-health-email-notifications

Monitoring Azure

For monitoring Azure services, we have the following bunch of tools:

Azure Service Health

Like M365, we have Azure service health. The tool let admin users to check the general status of their cloud resources. For detailed information check the following Microsoft documentation:

https://docs.microsoft.com/en-us/azure/service-health/overview

Azure alerts and notifications

You can set up alerts and email notifications for your Azure cloud service. Check the following link on how to create and configure them:

https://docs.microsoft.com/en-us/azure/service-health/alerts-activity-log-service-notifications-portal

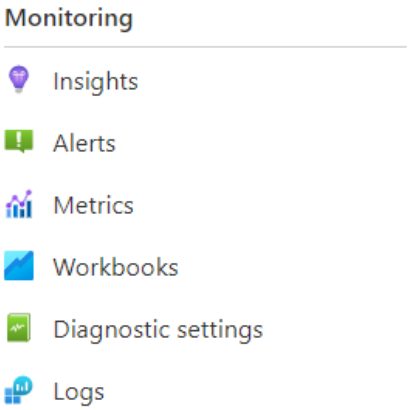
Monitoring

There is a section within Azure portal called "Monitor". It centralizes all the functionalities for monitoring your cloud services.

Monitoring Azure

Resource Monitoring

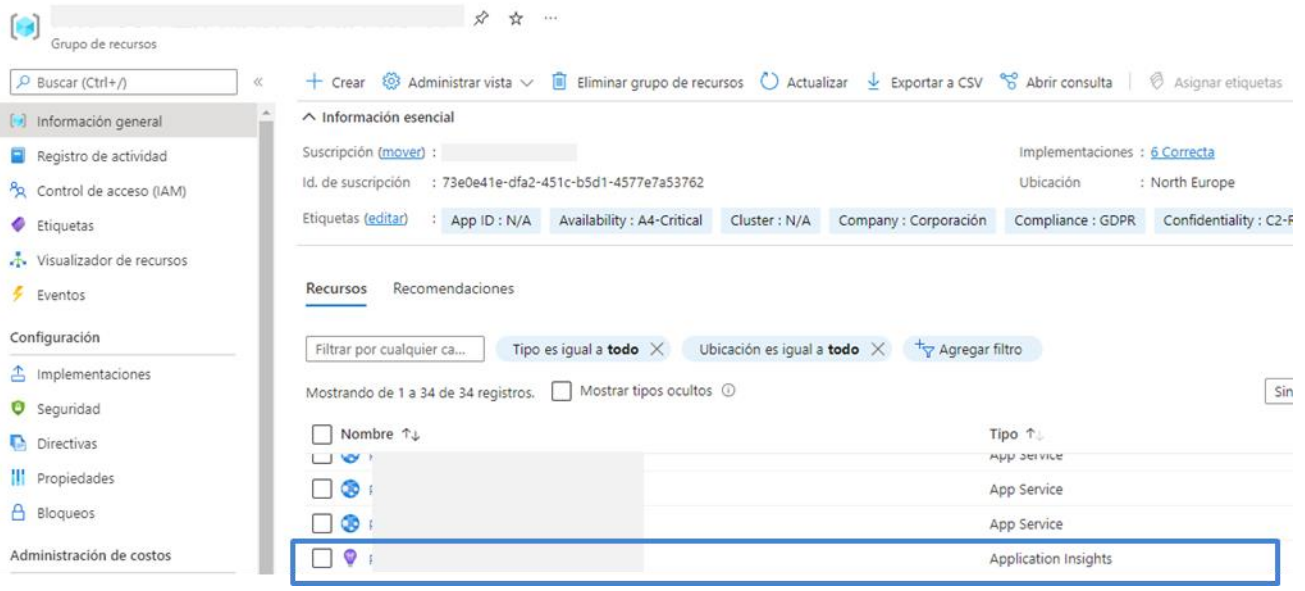
For each cloud service there is a section called "Monitoring" which includes different capabilities to check the service and its performance



- ***Insights***: Application insights is the main tool for checking App services performance and failures. Here TŌGŌ API calls are registered, and it is possible to see response times, failures, etc.
- ***Metrics***: Metrics provide a high-level view of the app service performance such us CPU, memory usage, thread count, etc. It is useful to see if any app service node is having performance issues
- ***Alerts***: Possibility to define alerts to see in real time when a resource is having any problem

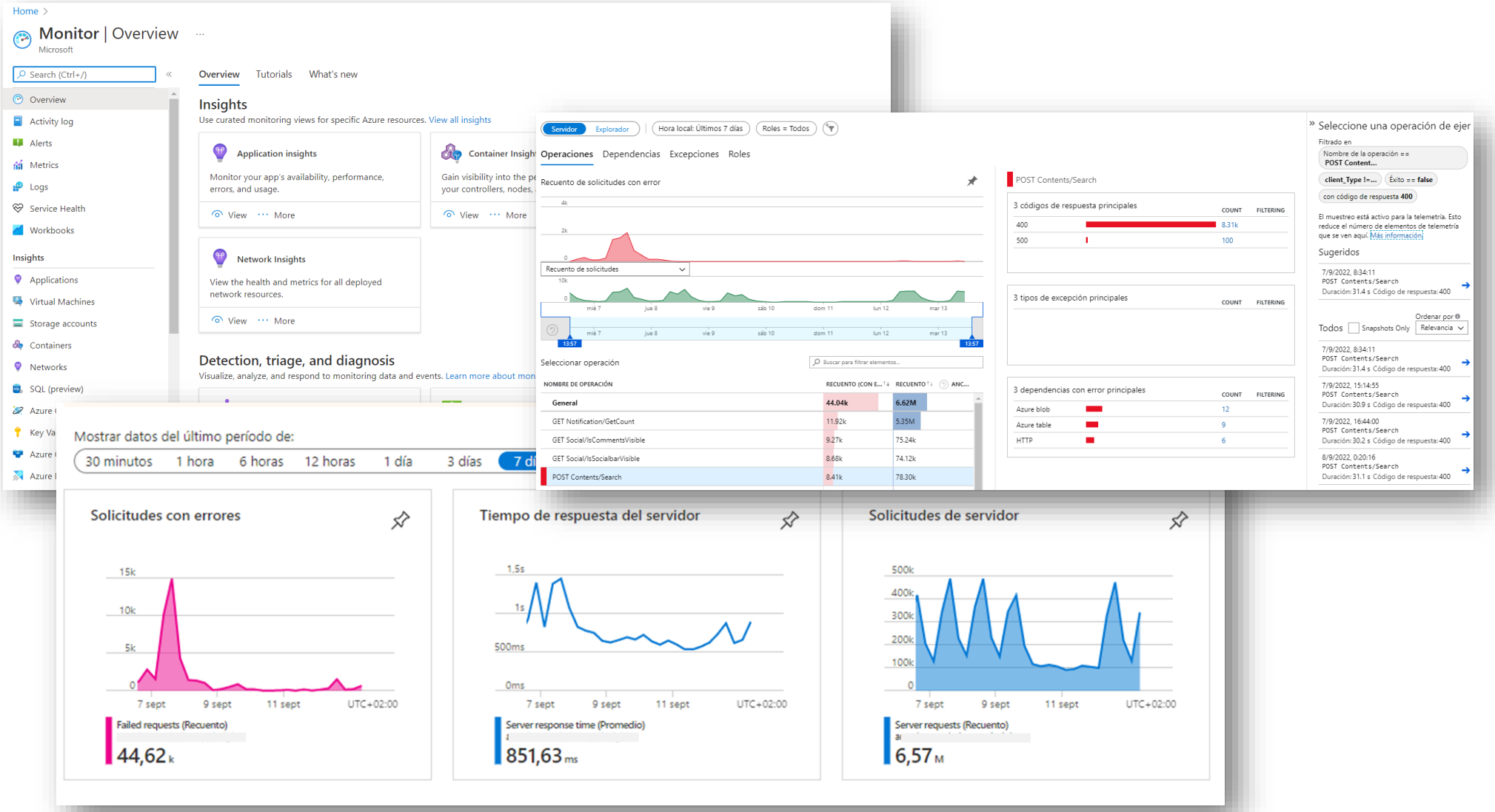
Monitoring Azure

To monitor all TŌGŌ cloud services, just access to the TŌGŌ resources group within Azure and click on the associated Application Insights.



Here there are different relevant reports as "Requests with errors" or "Server time response", deeping inside theses it's possible to analyze what specific endpoint or cloud service is failing.

Monitoring Azure



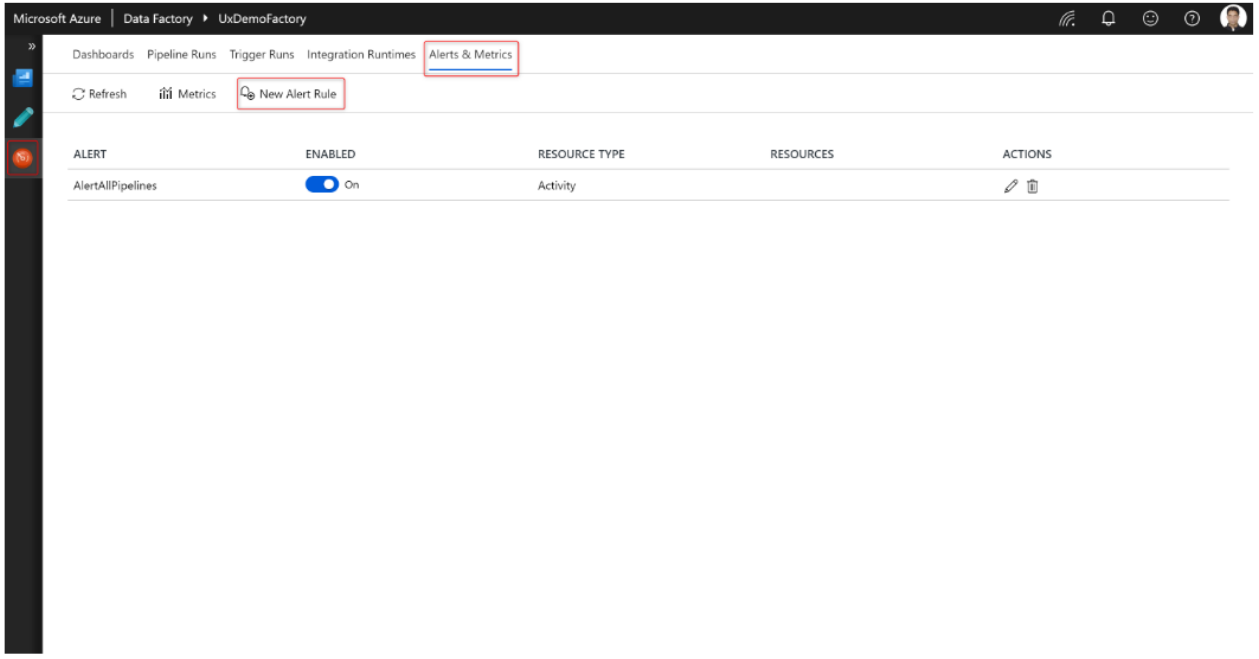
Monitoring TŌGŌ Analytics

TŌGŌ Analytics Pipeline alerts

It is possible to set alerts in Azure Data Factory pipelines which are used in TŌGŌ Analytics. You can define any alerts to have mail notifications when any pipeline or trigger has run incorrectly or with errors.

Check the following link to have more detailed information:

https://azure.microsoft.com/en-us/blog/create-alerts-to-proactively-monitor-your-data-factory-pipelines/



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