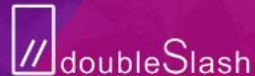




Azure Developer Community Day 2022

Willkommen | Welcome | Bienvenue | Bienvenido | Benvenuto | Welkom



The background of the slide features a photograph of a stage performance. On the right side, a band is visible, including a bassist and a guitarist. The stage is lit with spotlights. In the foreground, the silhouettes of an audience are visible, seated and facing the stage. A large, semi-transparent geometric overlay, consisting of overlapping triangles in shades of blue and red, covers the entire image. The text is positioned on the left side, over the blue portion of the overlay.

Mit Azure Container Apps und Dapr polyglotte Microservices entwickeln

Mit Azure Container Apps und Dapr polyglotte
Microservices entwickeln

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Mit Azure Container Apps und Dapr polyglotte
Microservices entwickeln

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MVP



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LN: <https://www.linkedin.com/in/richterralf/>



Agenda

- Challenges of polyglot microservices
- Distributed Application Runtime (Dapr)
- Azure Container Apps (ACA)
- Demo
- Best practices



Benefits of microservices

- Easier and better scalability (in and out)
- Improved fault tolerance / fault isolation
- Easier introduction of new and innovative technologies / features
- Independent lifecycle (smaller/faster deployments)
- Easier to understand due to smaller focus

Polyglot Microservices

- Each service can use the best stack in each case
- Easier introduction of new and innovative technologies
- Developers can use the programming language they know and like

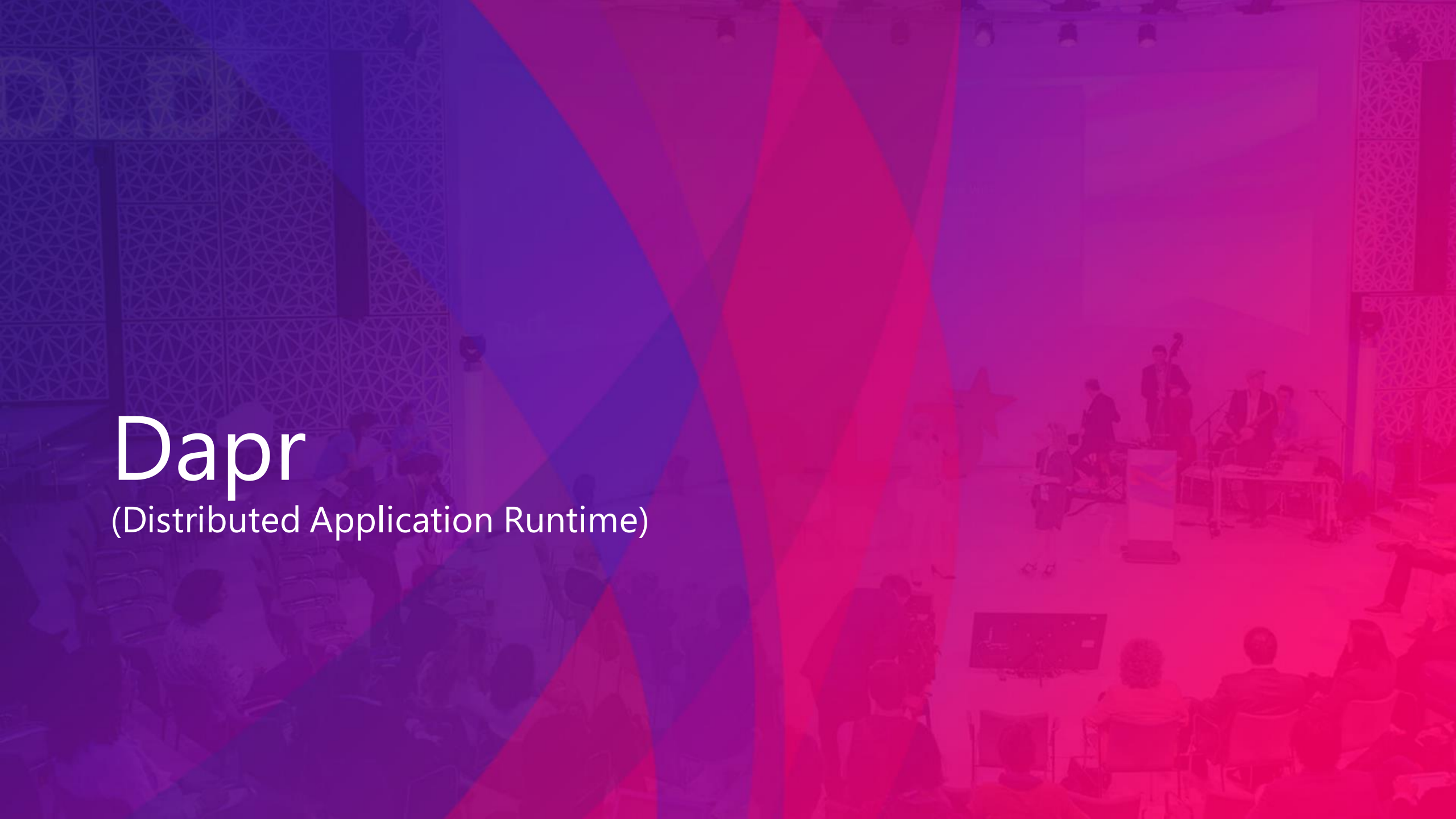
Challenges with polyglot microservices

- Complexity in implementation, maintenance, and troubleshooting
- Overhead due to non-functional requirements
- Sharing of implementations is difficult
- Differences in programming languages and tooling (IDEs, libraries, SDKs, frameworks)
- Implementation time and complexity increase with each additional programming language

We are missing ...

... "polyglot libraries and frameworks"



The background of the slide is a photograph of a stage performance. A large, semi-transparent red 'X' is superimposed over the entire image. The stage features a large screen displaying a mountain landscape. Several musicians are visible on stage, including a double bass player and a guitarist. The audience is seated in the foreground, and the stage is lit with spotlights.

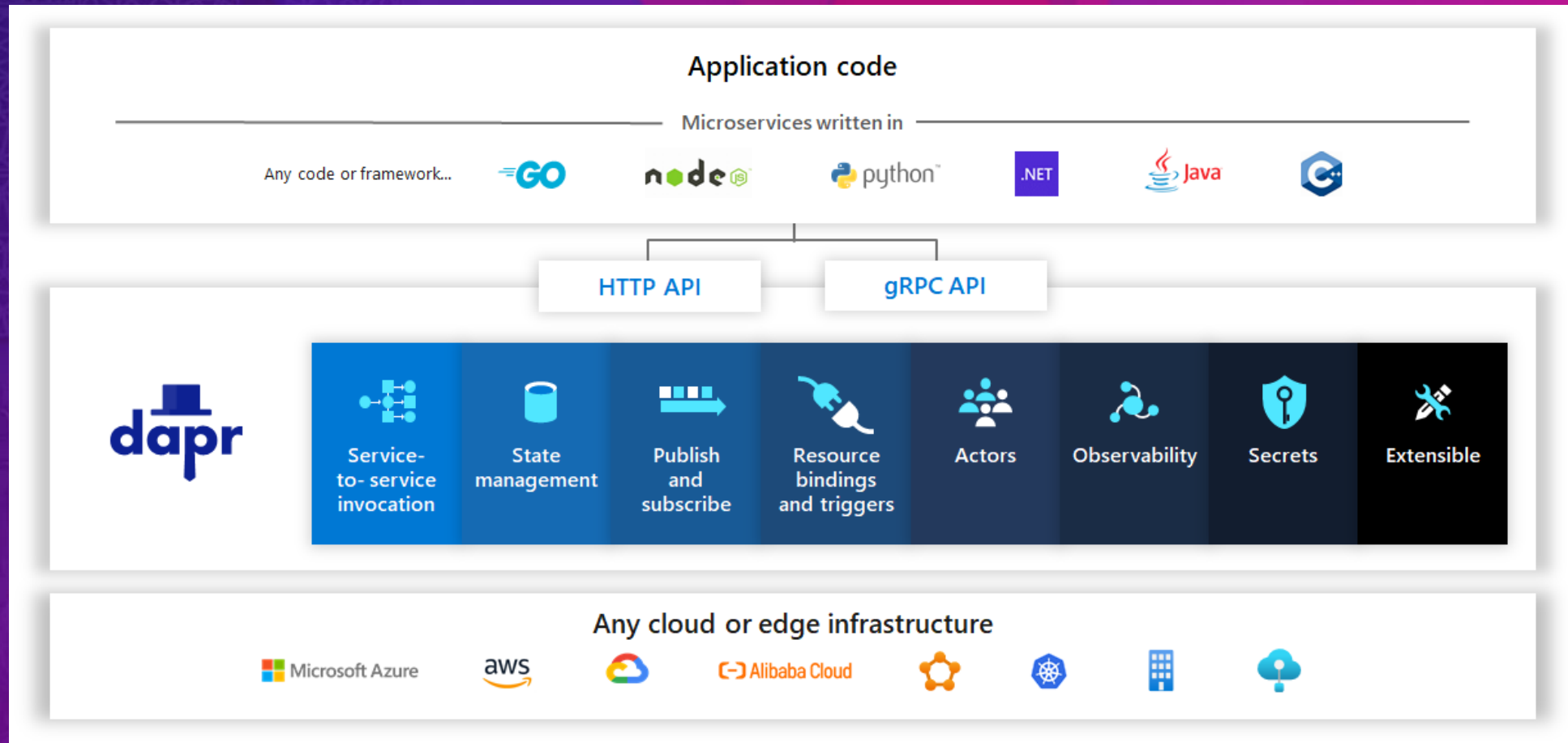
Dapr

(Distributed Application Runtime)

Dapr

- Announced by Microsoft Oktober 2019
- Written in GO
- Open-source
- Version 1.0 published February 2021 for production
- Platform agnostic
- Dapr is a portable, event-driven runtime that makes it easy for any developer to build resilient, stateless and stateful applications that run on the cloud and edge and embraces the diversity of languages and developer frameworks

Distributed Application Runtime



Distributed Application Runtime

Supported state stores

Amazon Web Services (AWS)

Component	CRUD	Transactional	ETag	TTL	Actors	Query	Status	Component version	Since runtime version
AWS DynamoDB	✓	☐	✓	✓	☐	☐	Alpha	v1	1.0

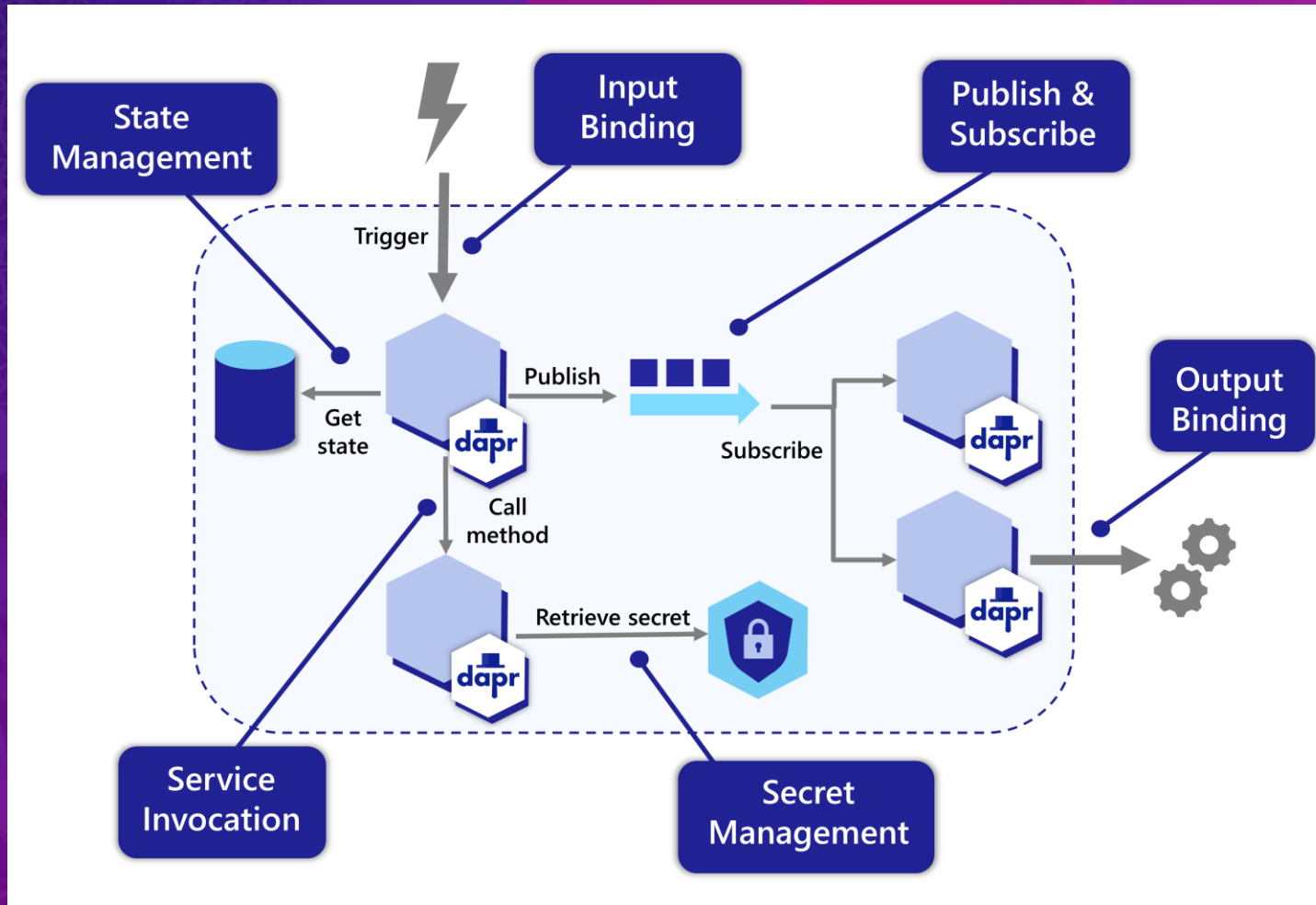
Google Cloud Platform (GCP)

Component	CRUD	Transactional	ETag	TTL	Actors	Query	Status	Component version	Since runtime version
GCP Firestore	✓	☐	☐	☐	☐	☐	Alpha	v1	1.0

Microsoft Azure

Component	CRUD	Transactional	ETag	TTL	Actors	Query	Status	Component version	Since runtime version
Azure Blob Storage	✓	☐	✓	☐	☐	☐	Stable	v1	1.0
Azure CosmosDB	✓	✓	✓	✓	✓	✓	Stable	v1	1.0
Azure SQL Server	✓	✓	✓	☐	✓	☐	Stable	v1	1.5
Azure Table Storage	✓	☐	✓	☐	☐	☐	Beta	v1	1.7

Dapr sample





Azure Container Apps

(ACA)

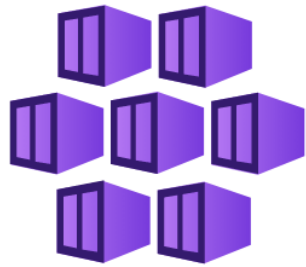
Yet another service for containers?

- Azure Kubernetes Service (AKS) is lacking a real serverless pricing
- Kubernetes is complex
- In some szenarios, Kubernetes is too much

Overview of Azure services running container:



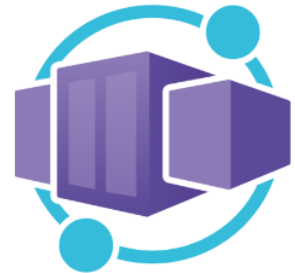
Azure WebApps
for Containers



Azure Kubernetes Services



Azure Container Instances



Azure Container Apps

Azure Container Apps

- Enables running microservices and containerized Apps serverless
- Multiple container revisions (up to 100)
- Autoscal based on KEDA (Kubernetes Event-driven Autoscaling)
- Any container registry
- Deploy with CLI, ARM or Azure Portal
- DAPR support

Azure Container Apps

- Serverless platform
- Pricing by compute allocation:
- This is under the hood – powerful open-source:
 - Kubernetes
 - Envoy (Ingress Controller)
 - Dapr
 - KEDA

Summary: less complexity for you

Azure Container Apps

Made for:

- Microservices
- Background processing
- Event-driven Apps



Azure Container Apps



Environments are an isolation boundary around a collection of container apps.

ENVIRONMENT: OPTIONAL CUSTOM VIRTUAL NETWORK

CONTAINER APP 1

REVISION 1

REPLICA

CONTAINER(S)

REVISION 2

REPLICA

CONTAINER(S)

CONTAINER APP 2

REVISION 1

REPLICA

CONTAINER(S)

REVISION 2

REPLICA

CONTAINER(S)

Azure Container Apps



Azure Container Apps: Example scenarios

PUBLIC API ENDPOINTS



HTTP requests are split between two versions of the container app where the first revision gets 80% of the traffic, while a new revision receives the remaining 20%.

AUTO-SCALE CRITERIA

Scaling is determined by the number of concurrent HTTP requests.

BACKGROUND PROCESSING



A continuously-running background process that transforms data in a database.

AUTO-SCALE CRITERIA

Scaling is determined by the level of CPU or memory load.

EVENT-DRIVEN PROCESSING

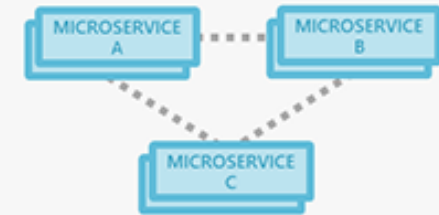


A queue reader application that processes messages as they arrive in a queue.

AUTO-SCALE CRITERIA

Scaling is determined by the number of messages in the queue.

MICROSERVICES



Deploy and manage a microservices architecture with the option to integrate with Dapr.

AUTO-SCALE CRITERIA

Individual microservices can scale according to any KEDA scale triggers.

Azure Container Apps



The background image shows a large, modern hall with a stage and an audience. The stage features a large screen and a band performing. The audience is seated in rows of chairs. A large, stylized 'X' graphic is overlaid on the image, with the left half in blue and the right half in red. The word 'Demo' is written in white text on the left side of the image.

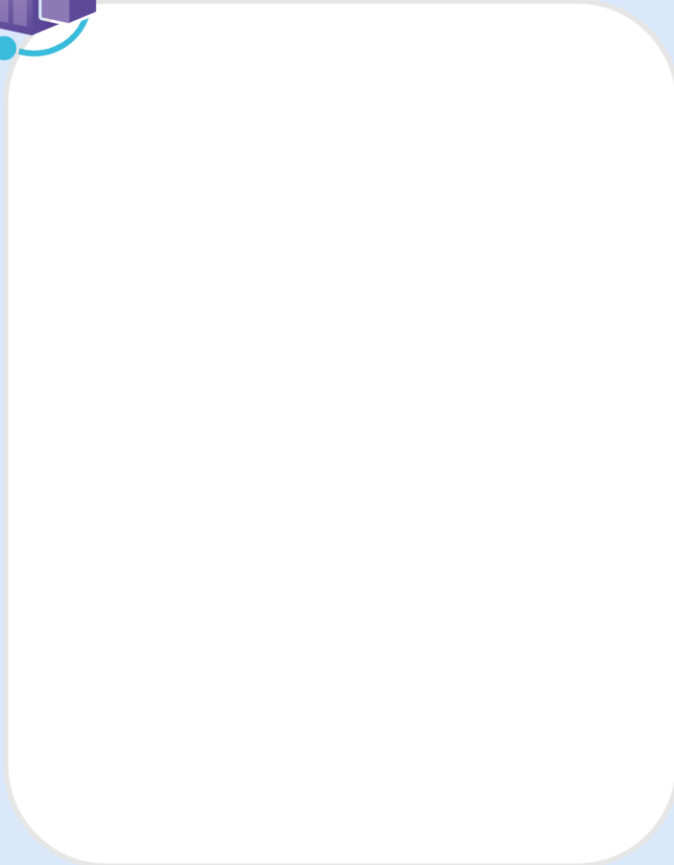
Demo



Azure



Azure Container Apps environment

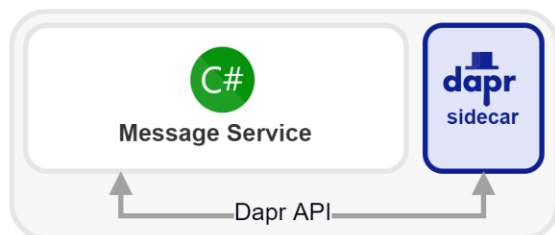




Azure



Azure Container Apps environment

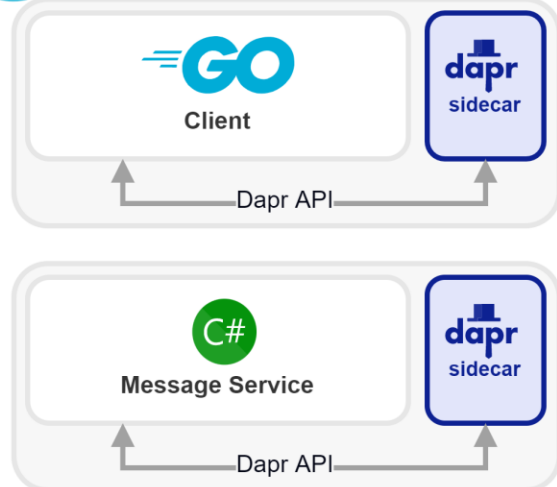




Azure



Azure Container Apps environment

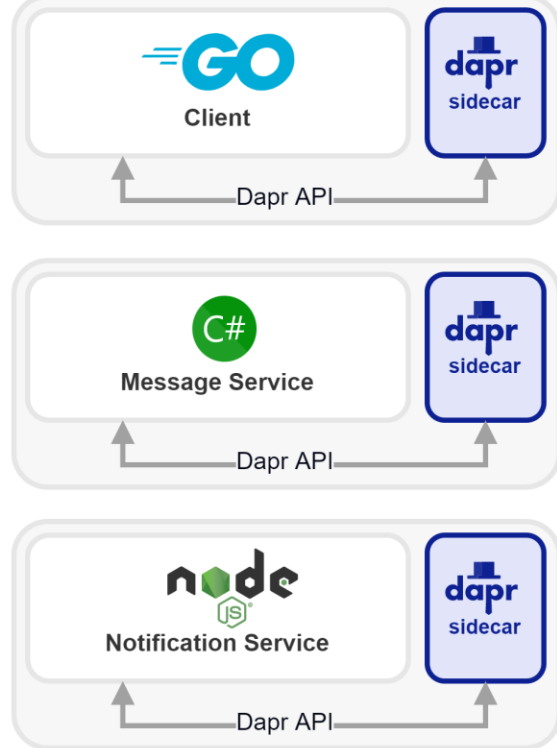




Azure



Azure Container Apps environment

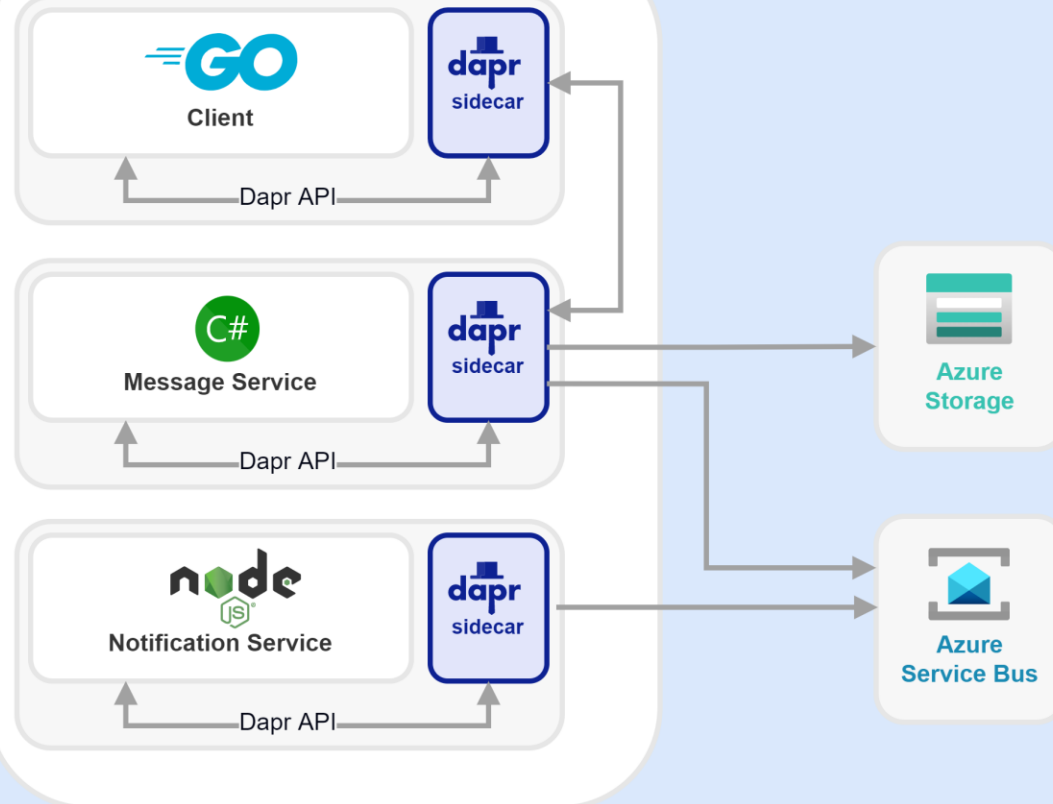




Azure



Azure Container Apps environment

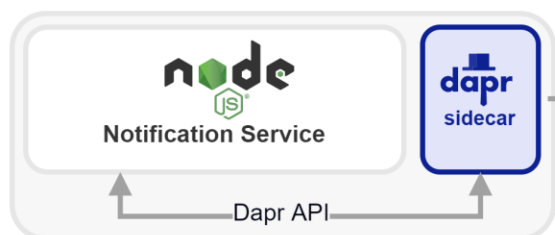
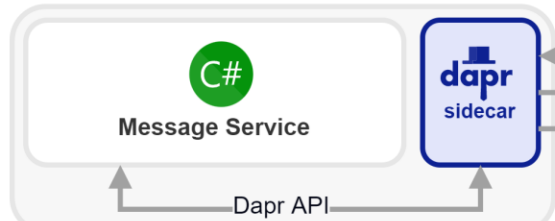
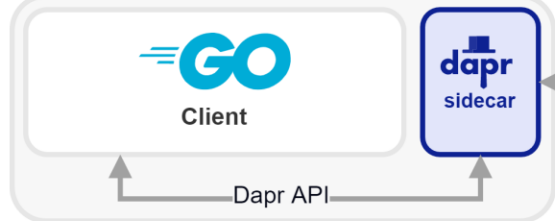




Azure



Azure Container Apps environment



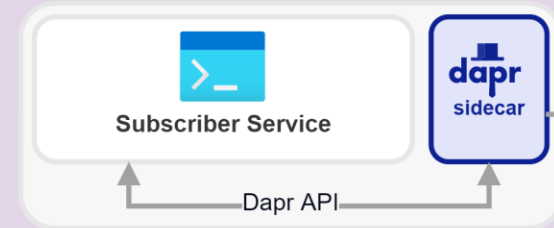
Azure
Storage



Azure
Service Bus



Notebook



Best Practices



Manage secrets

- Key Vault Unterstützung ist auf der Roadmap für Azure Container Apps

Secrets in Dapr component configuration

```
componentType: pubsub.azure.servicebus
version: v1
metadata:
- name: connectionString
  secretRef: connectionstringsecret
secrets:
- name: connectionstringsecret
  value: Endpoint=sb://sbdemo.servicebus.windows.net/;SharedAccessKeyName=KeyName;SharedAccessKey=Key
scopes:
- daprdemo-message-service
- daprdemo-notification-service
- daprdemo-pwsh-service
```

ACA Env – Dapr Component

Microsoft Azure

Search resources, services, and docs (G+)

Ralf.Richter@azuredev...
AZURE DEV MEETUP MUNICH (A...

Home > rg-azdevcom-aca-dapr-demo > conappenv-azdevcom-aca-dapr-demo

conappenv-azdevcom-aca-dapr-demo | Dapr components ...

Container Apps Environment

Search

Refresh Send us your feedback

Overview

Access control (IAM)

Tags

Settings

Dapr components

Certificates

Custom DNS suffix

Locks

Apps

Apps

Monitoring

Logs

Logging options

Automation

Tasks (preview)

Export template

Dapr components

Get reliable service-to-service calls for your new revision. Select more Dapr components for capabilities like state management, message publish/subscribe, and more.

Dapr components

Add

Name ↑	Type ↑	Delete
dapr-demo-pubsub	pubsub.azure.servicebus	
dapr-demo-state-store	state.azure.blobstorage	

Manage secrets

Edit Dapr component

Version *
v1

Secrets

Secrets can be used to protect sensitive data like passwords and connection strings. It is recommended to create and reference a Dapr secret store to source credentials when creating other component types such as state stores.

☐ Use Dapr secret store component

No secret store component available for reference. [Learn more](#)

Add

Name	Value	Delete
connectionstringsec...		

Metadata

Add

Name	Source	Value	Delete
connectionString	Reference a se...	connectionstri...	

Scopes

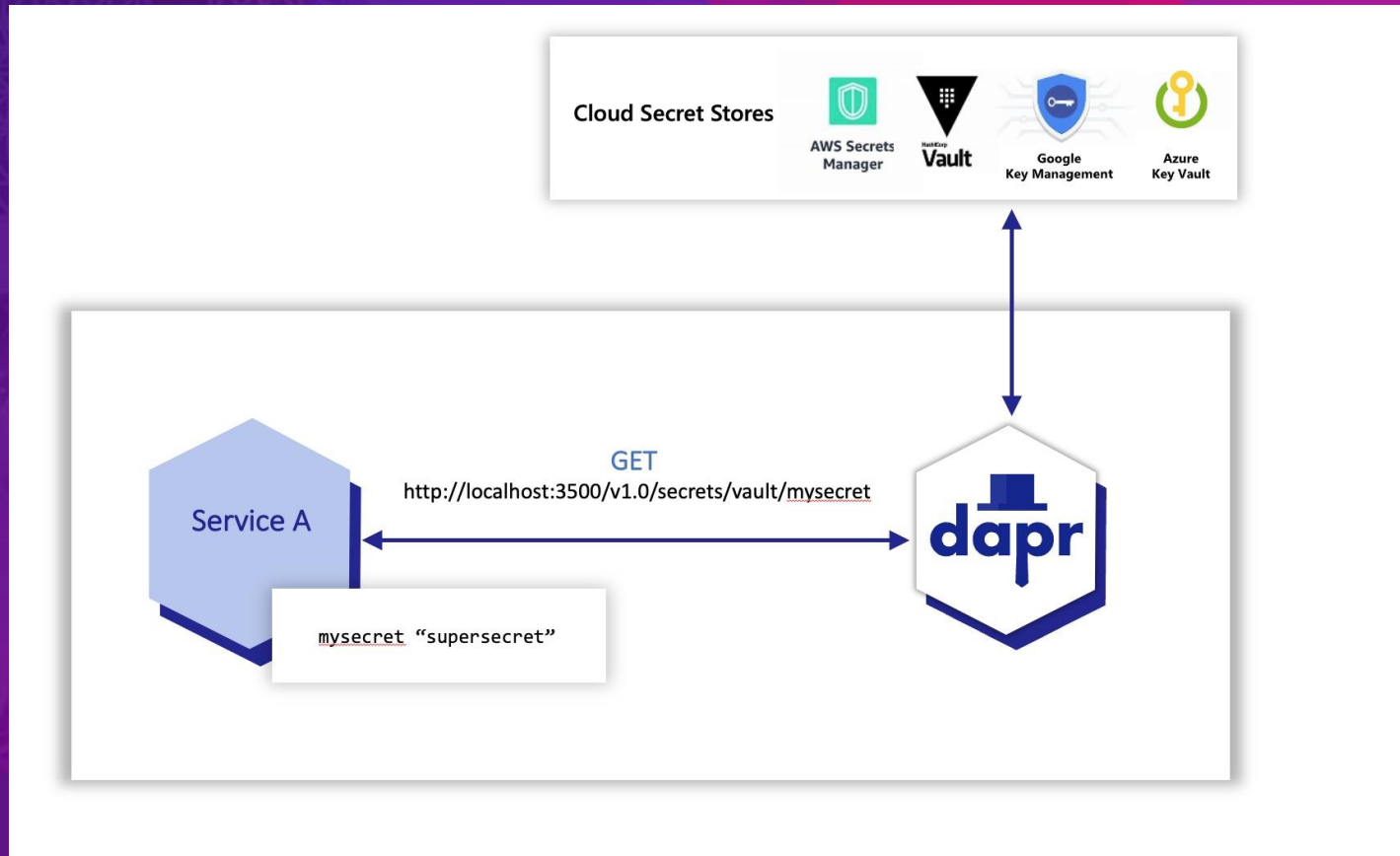
Dapr scopes ensure your component is only loaded by applications with specific Dapr App Ids at runtime.

Add

App Id	App Name	Delete
dapr-demo-me... ▾	dapr-demo-messag...	
dapr-demo-not... ▾	dapr-demo-notifica...	

Building Block Secret Management

- Z.B. für Key Vault



Error handling

- Failed provisioning
 - Console and log stream do not help „This revision is scaled to zero“
 - Log Analytics to the rescue
- Track dapr issues
 - Log Stream dapr console (daprd)
 - Invoke the API
 - Remember: When dapr components are updated, a new revision must be created

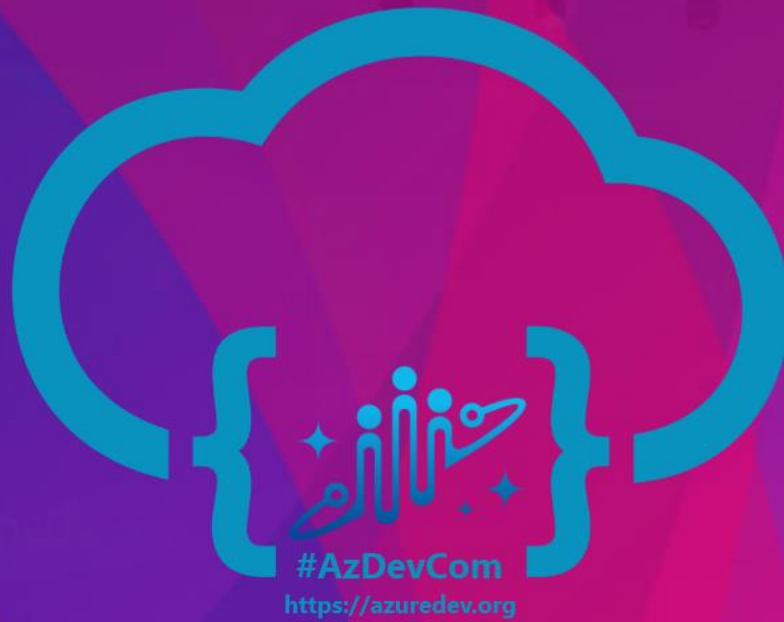
Troubleshooting Demo

The background image shows a live music performance on a stage. A band is visible, including a bassist, a guitarist, and a singer. The stage is lit with warm lights, and there are large speakers on the sides. In the foreground, the backs of several audience members' heads are visible as they sit in rows of chairs, facing the stage. A large, semi-transparent 'X' graphic is overlaid on the entire image, with the left half being a deep blue and the right half being a vibrant red. The text 'Troubleshooting Demo' is written in a clean, white, sans-serif font, centered horizontally and vertically over the 'X'.

Get help

- [Dapr Docs](#)
- [Discord](#)
- [Stackoverflow](#)
- [Community Meetings](#)
- [@daprdev Twitter](#)





Vielen Dank | Thank you | Merci | Grazie | Gracias | Veel dank

