



nt konferenca
2021

27. – 29. september 2021

Distributed APplication Runtime

Bojan Vrhovnik

Cloud Solution Architect

bojan.Vrhovnik@microsoft.com

T: @bvrhovnik | B: <https://beyondlocalhost.tech>



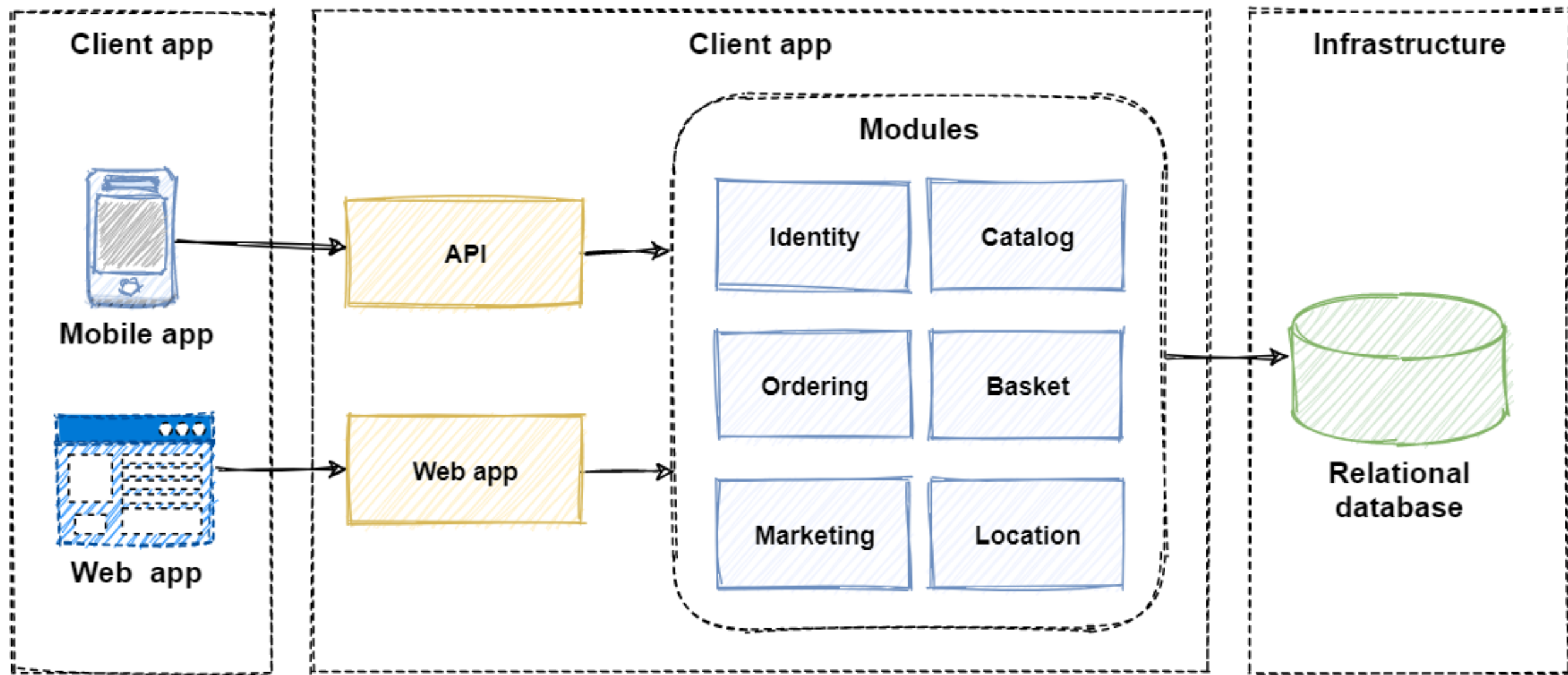
Agenda

Why Dapr?

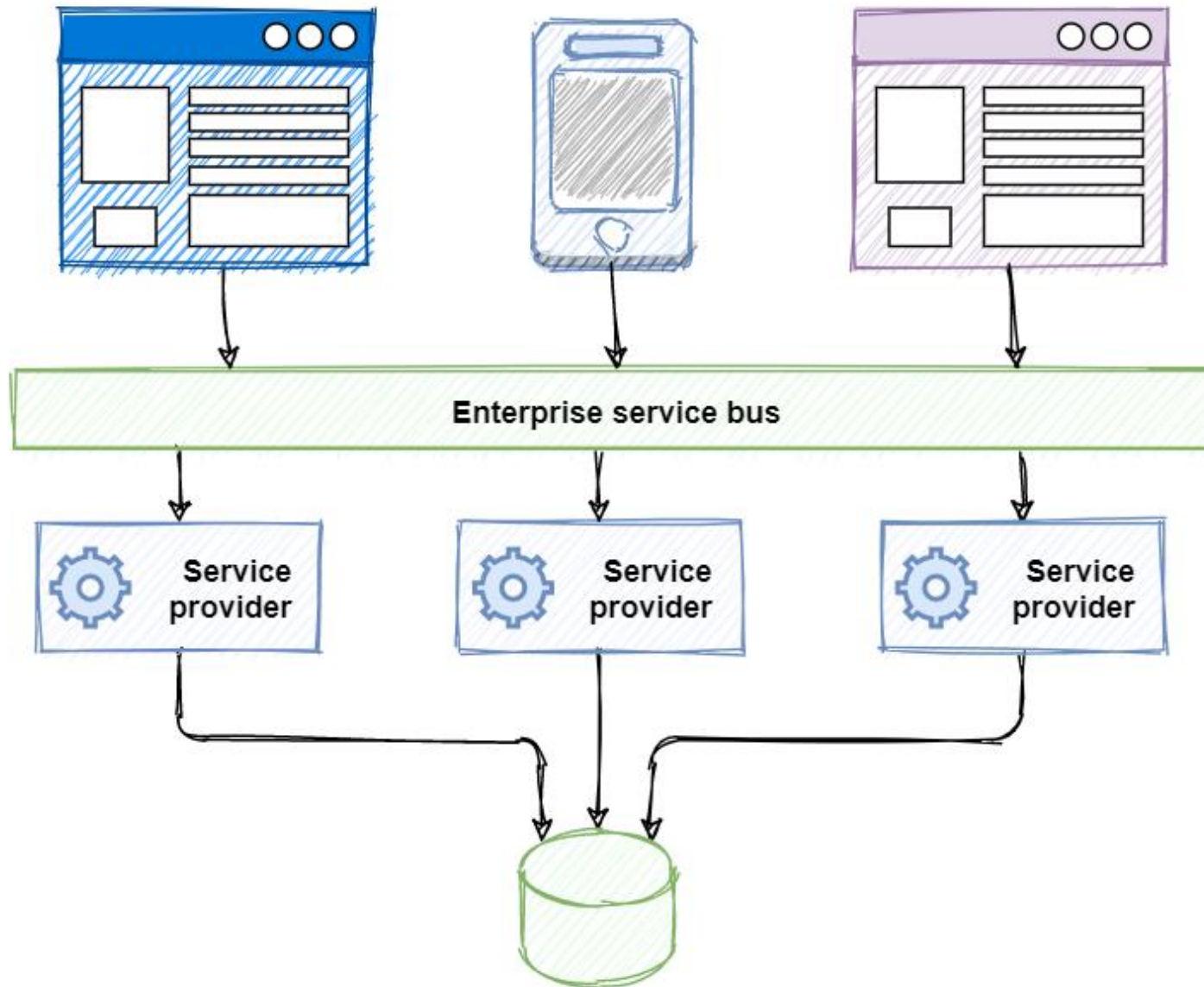
How it works?

How can we use it in our apps?

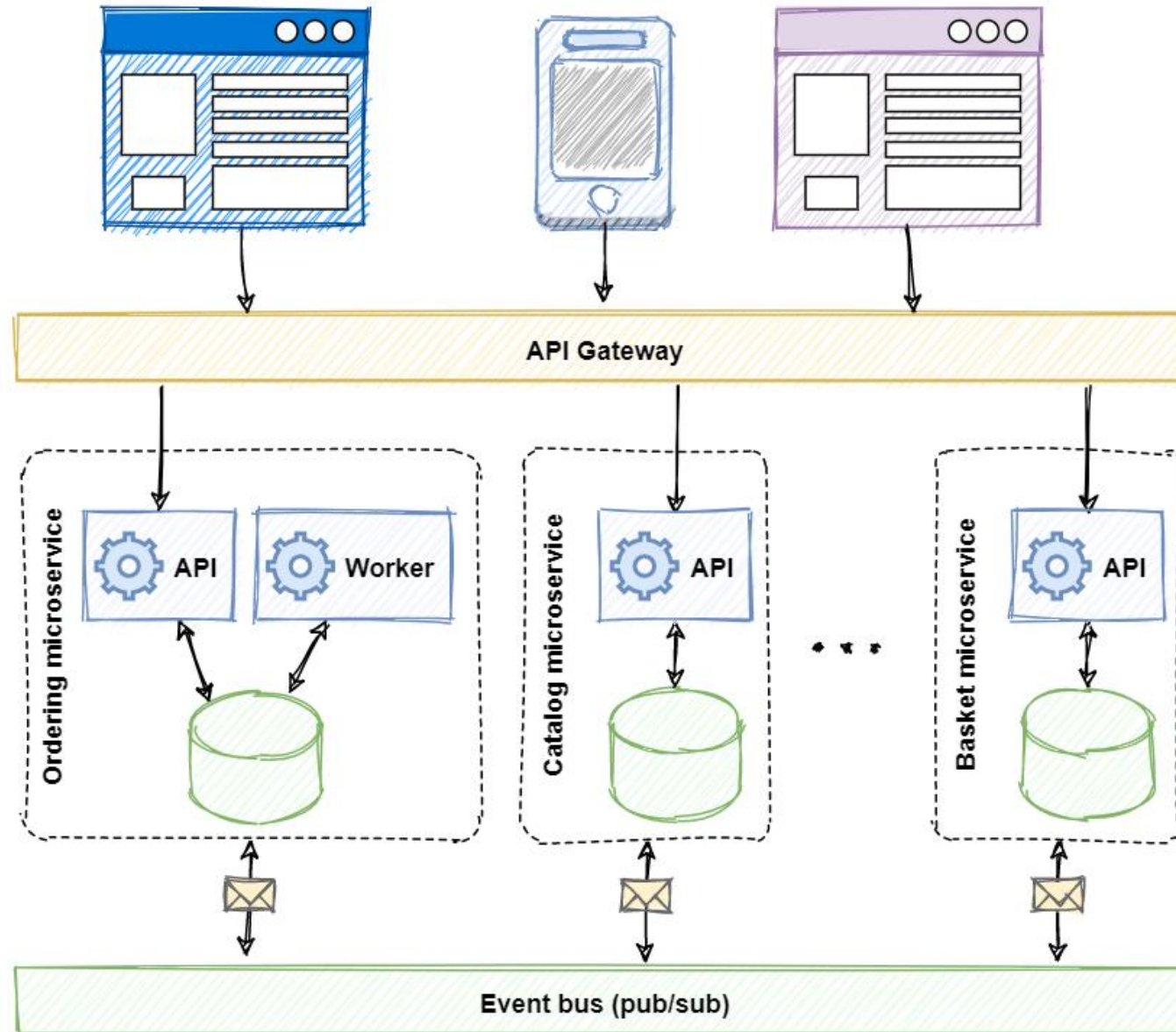




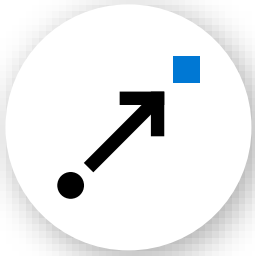
Consumers



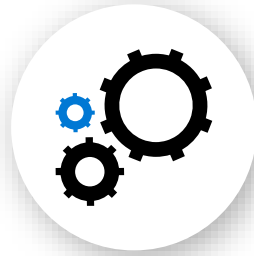
Consumers



What is holding microservice development back?



Hard to incrementally migrate
from existing code to a
microservices architecture



Programming model runtimes
have narrow language
support and tightly controlled
feature sets



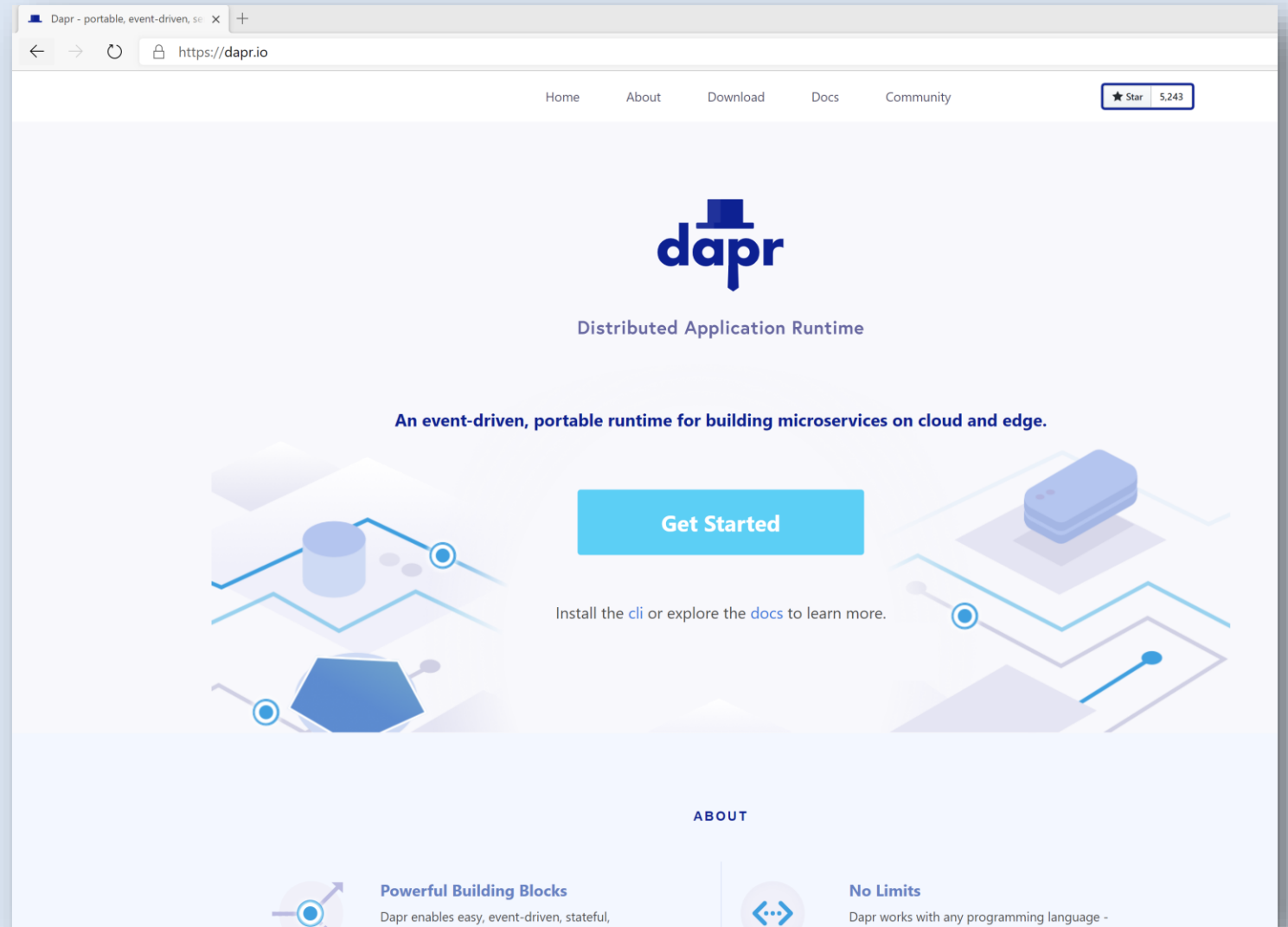
Runtimes only target specific
infrastructure platforms with
limited code portability across
clouds and edge



Distributed Application Runtime

Portable, event-driven, runtime for building distributed applications across cloud and edge

<https://dapr.io>



Dapr Goals



Best-practices building blocks



Any language or framework



Consistent, portable, open APIs



Adopt standards



Extensible and pluggable components



Platform agnostic cloud + edge



Community driven vendor neutral

Dapr: Distributed Application Runtime

Build apps using any language with any framework

Application code

Microservices written in

Any code or framework...



HTTP API

gRPC API



Service-to- service invocation



State management



Publish and subscribe



Resource bindings and triggers



Actors



Distributed tracing



Secrets

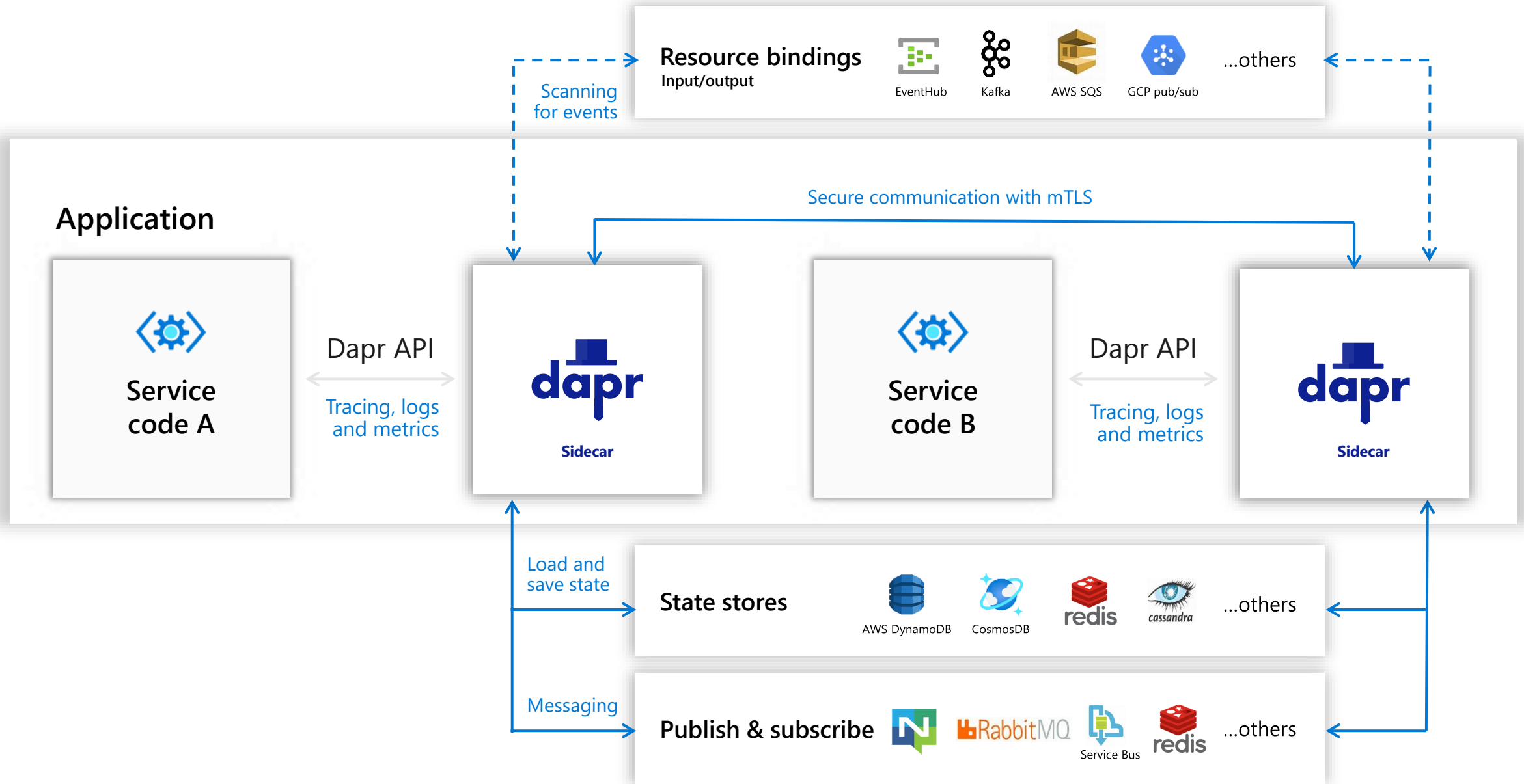


Extensible

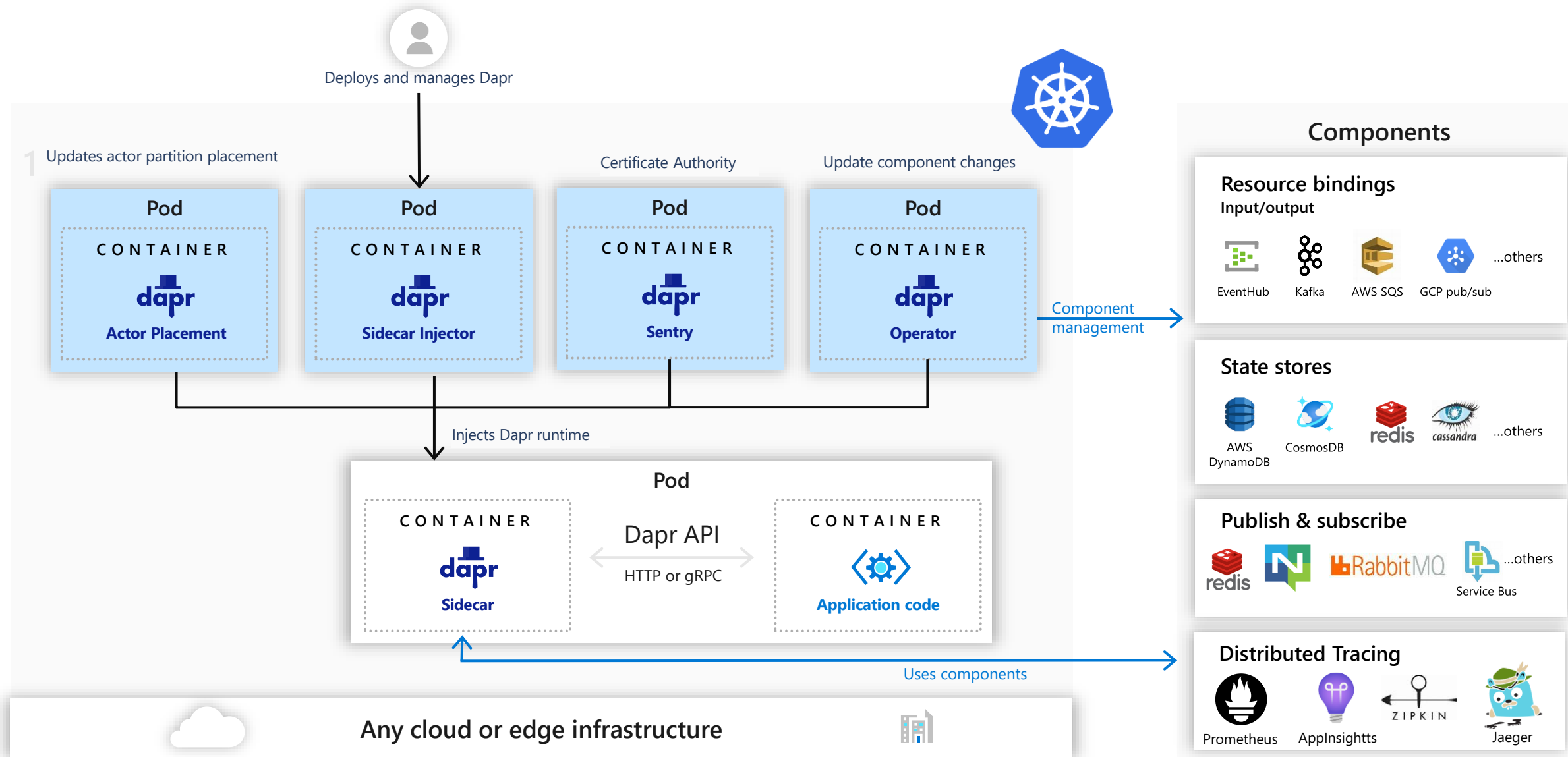
Any cloud or edge infrastructure



Sidecar and component architecture

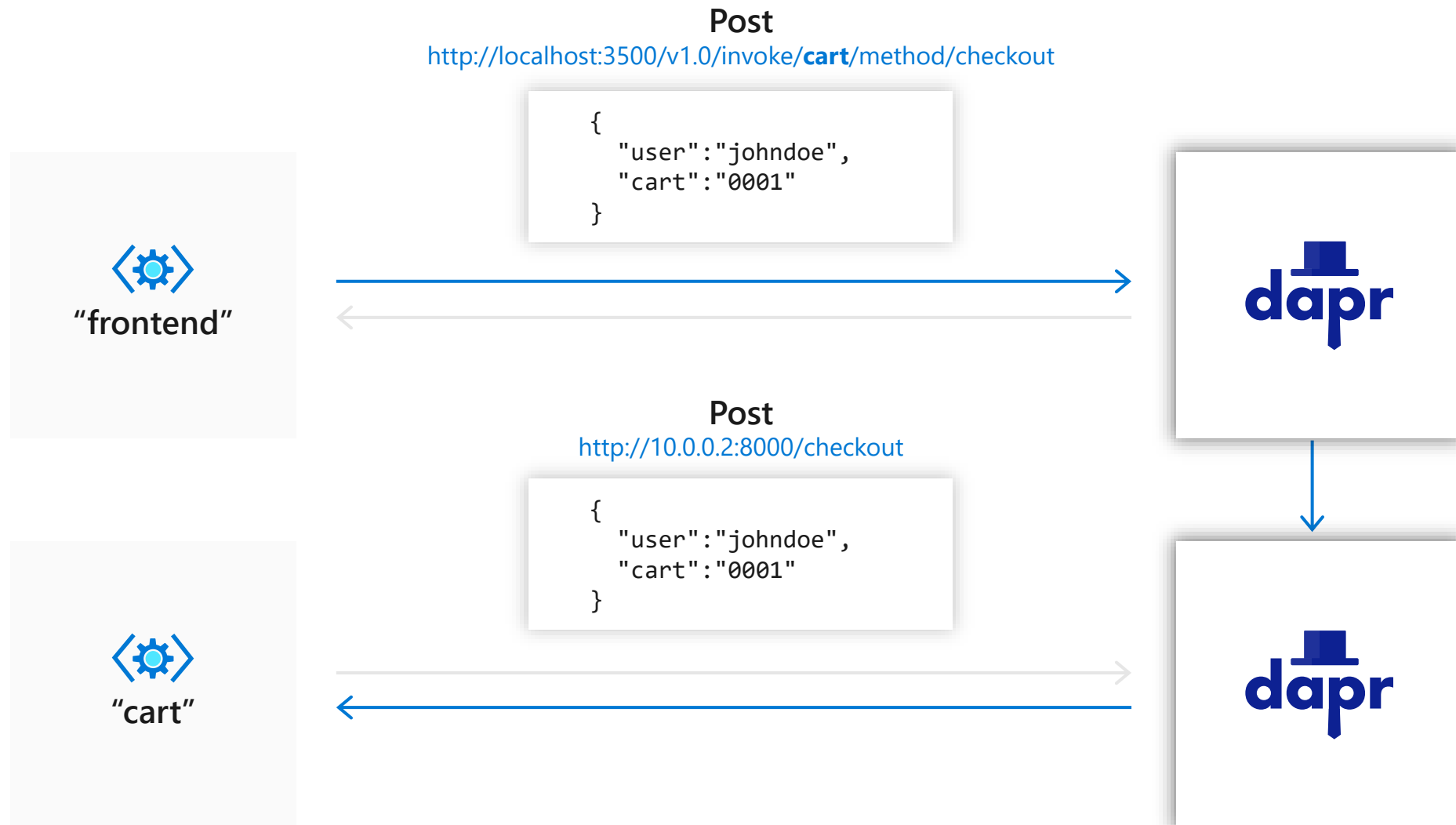


Dapr Kubernetes hosted



Microservice building blocks

Service invocation

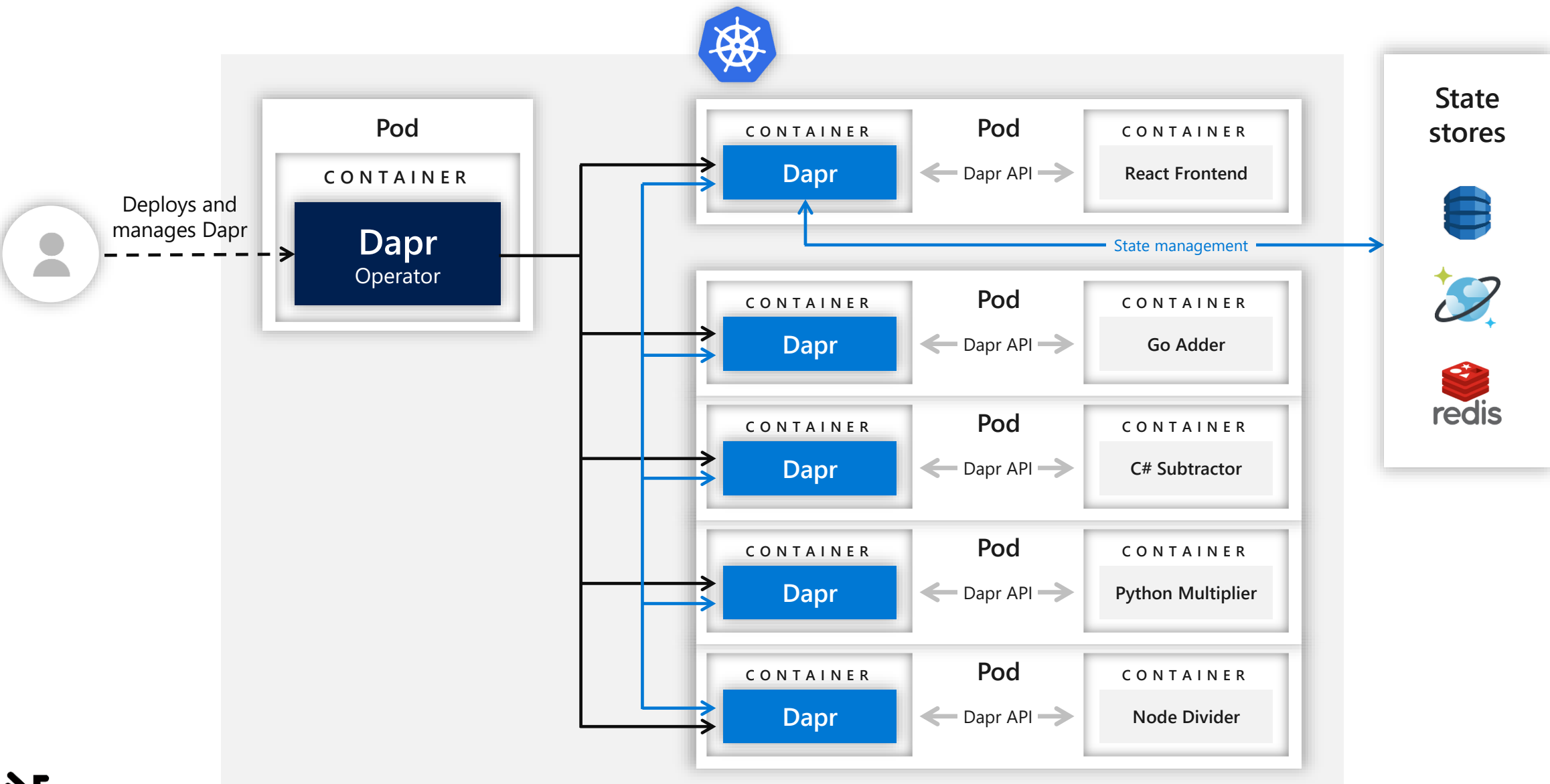


DEMO

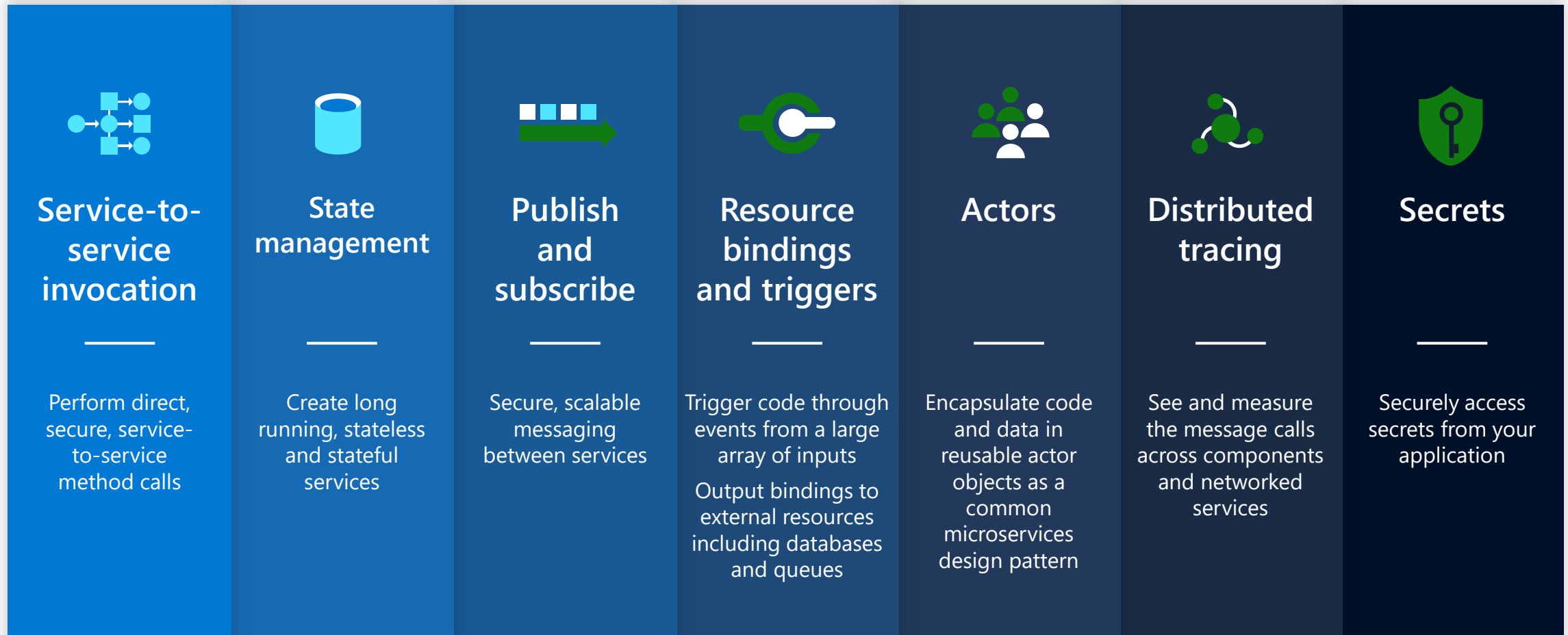
Hello Service

Basic Dapr usage

Calculator sample



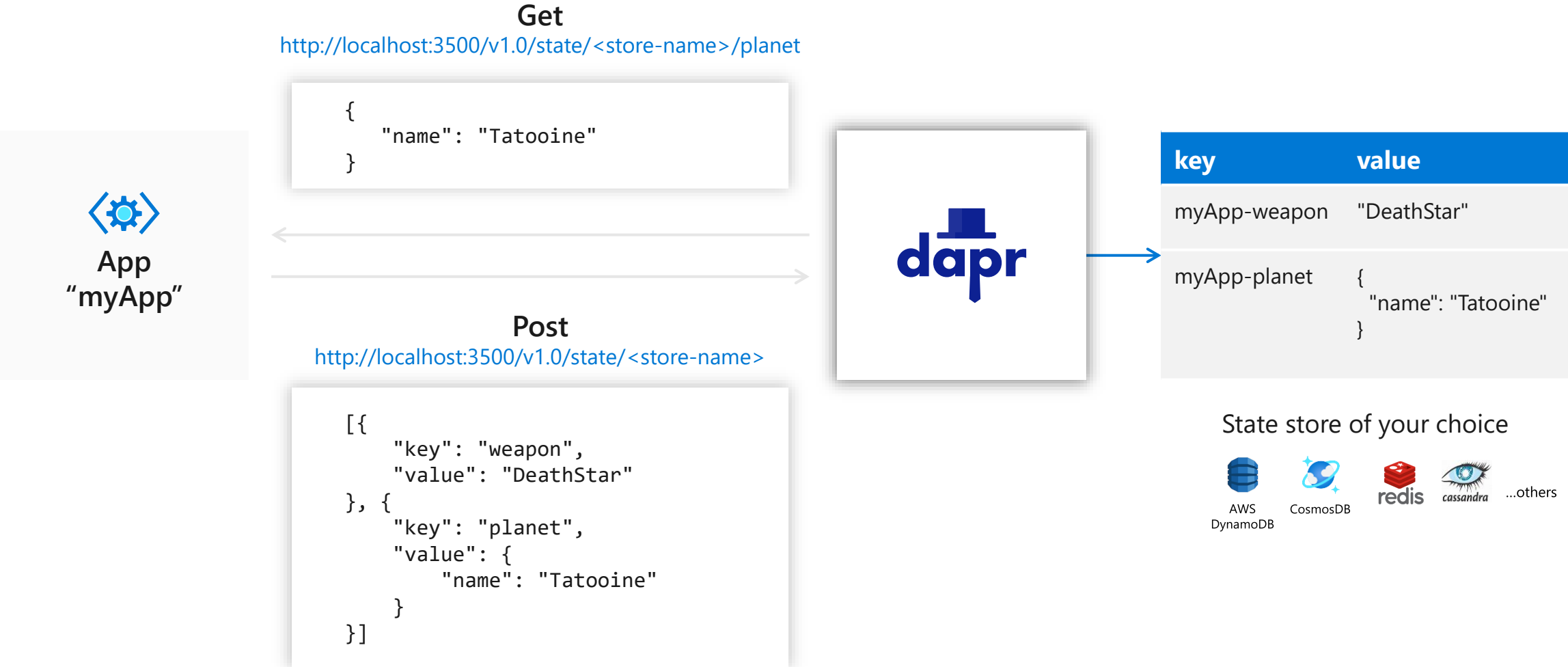
Microservice building blocks



Use Dapr components

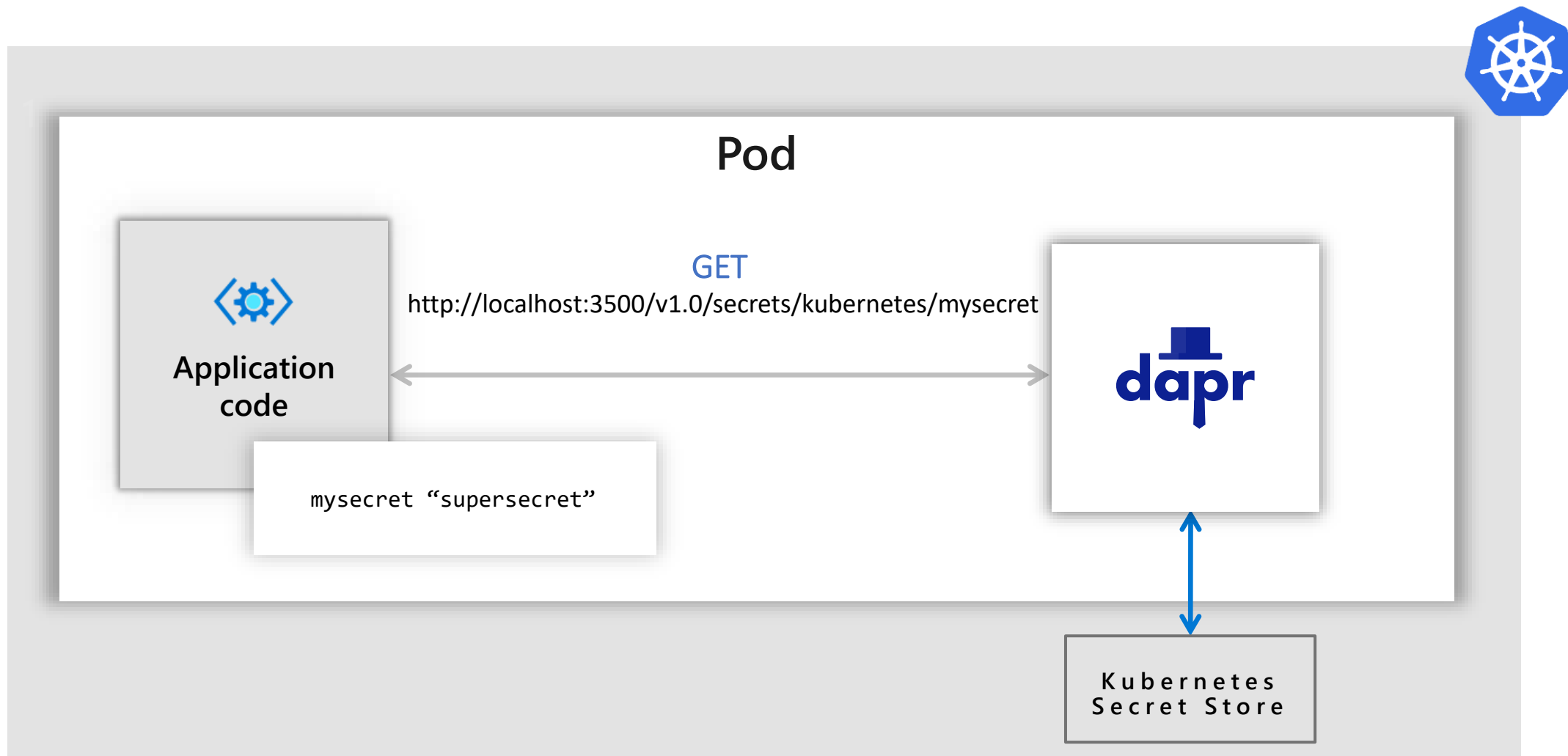
Microservice building blocks

State management: key/value



Microservice building blocks

Secrets with Kubernetes

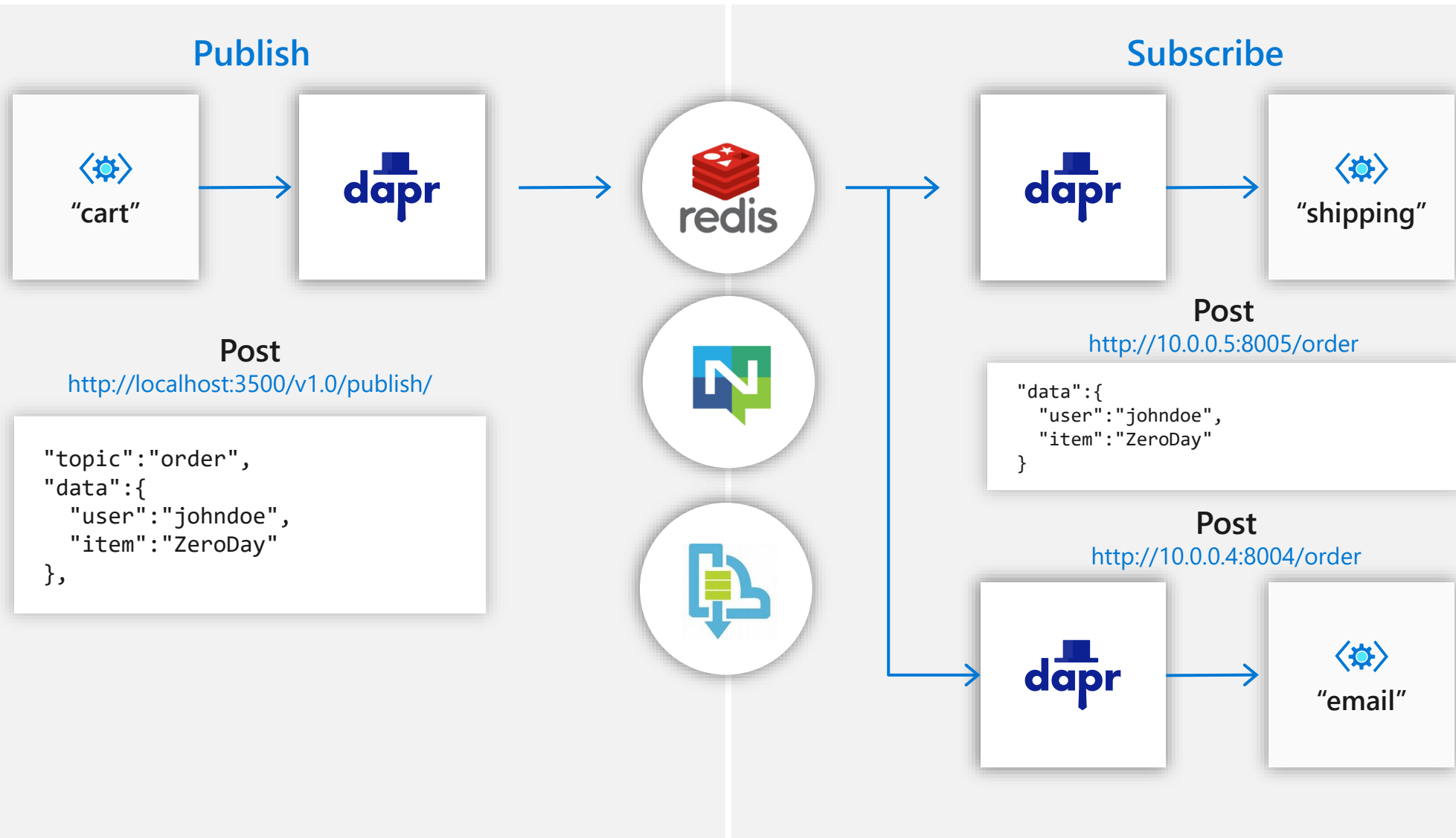


DEMO

Dapr state management components

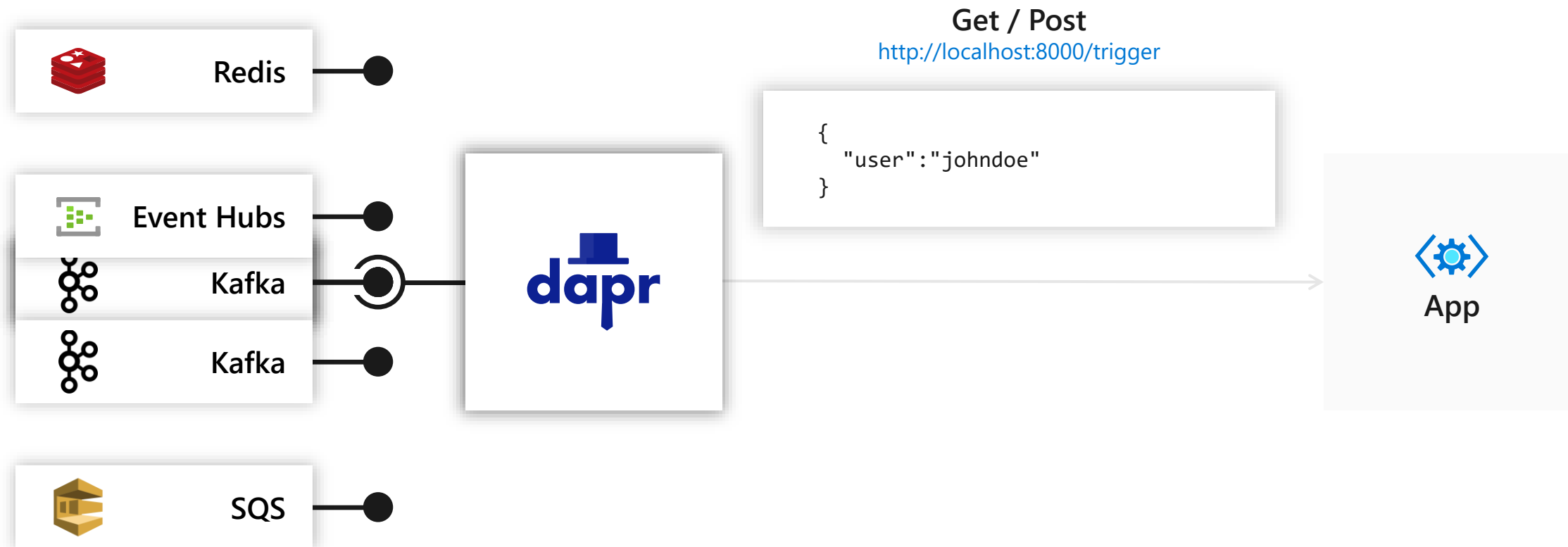
Microservice building blocks

Publish and subscribe



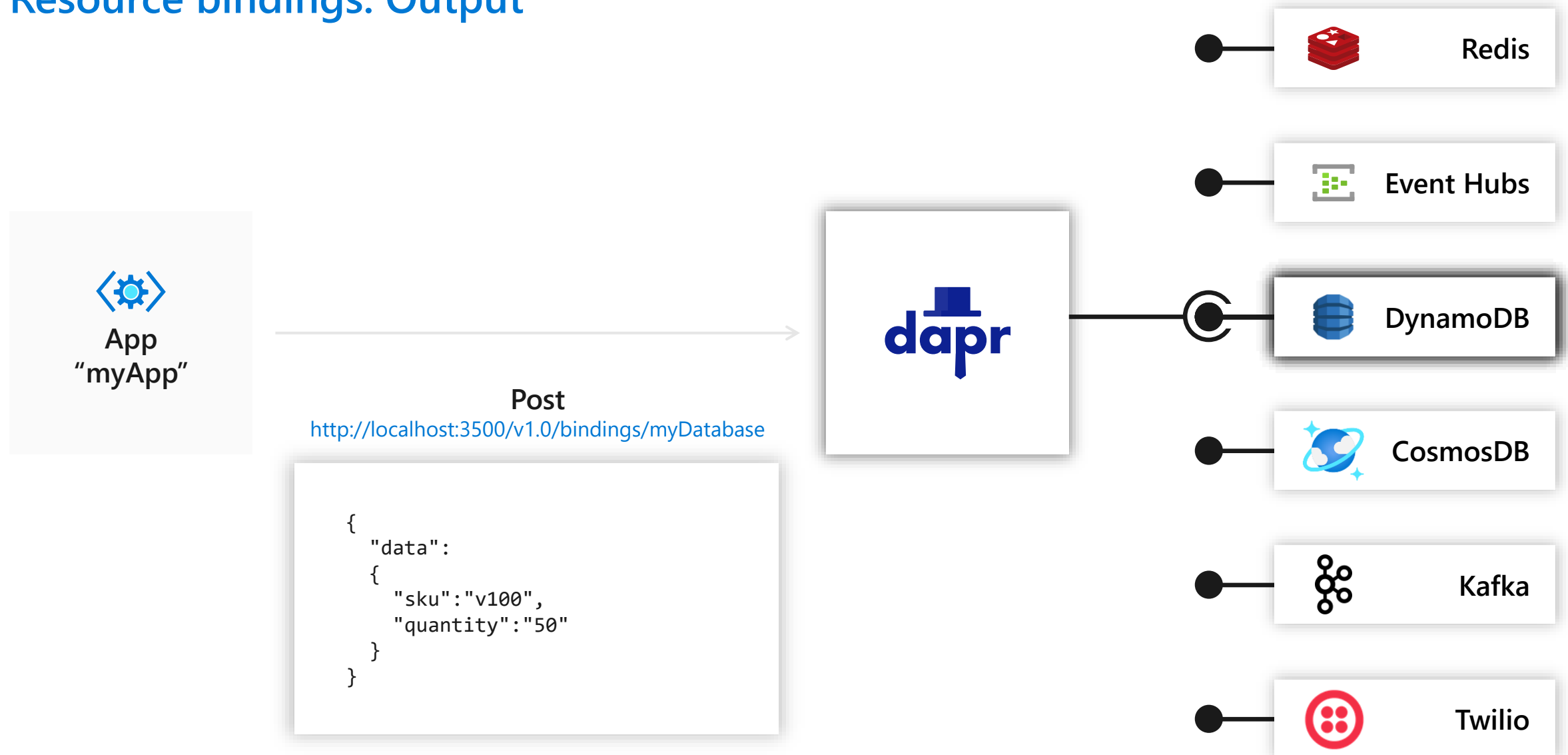
Microservice building blocks

Resource triggers: Input



Microservice building blocks

Resource bindings: Output



DEMO

Dapr Publish and Subscribe

Distributed Application Runtime

Build apps using any language with any framework

Dapr language SDKs

Application code

Microservices written in

Any code or framework...



HTTP API

gRPC API



Service-to- service invocation



State management



Publish and subscribe



Resource bindings and triggers



Actors



Distributed tracing



Secrets



Extensible

Any cloud or edge infrastructure



Integration with developer frameworks

Application code

Microservices written in

Any code or framework...

Virtual Actors 

ASP.NET Core 

Functions 

Logic Apps 

Spring Boot 

Server Side Blazor 

HTTP API

gRPC API




Service-to- service invocation


State management


Publish and subscribe


Resource bindings and triggers


Actors


Distributed tracing


Secrets


Extensible

Any cloud or edge infrastructure

 Microsoft Azure

 aws



 Alibaba Cloud









Dapr and Azure Functions

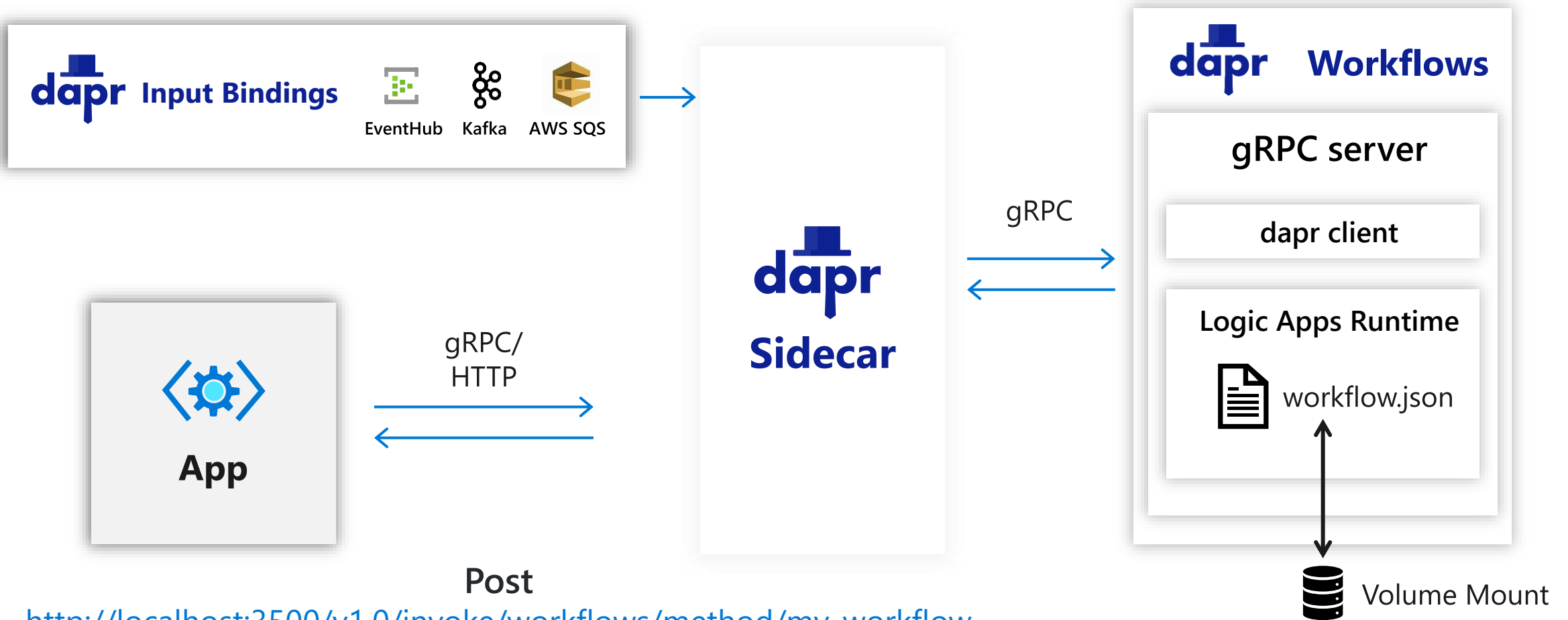
- Building an Azure Functions Dapr extension
- Enables an Azure Function to interact seamlessly with Dapr capabilities in Kubernetes, IoT Edge and other hosting platforms

```
[FunctionName("StateInputBinding")]
public static async Task<IActionResult> Run(
    [HttpTrigger(AuthorizationLevel.Function, "get", Route = "state/{key}")] HttpRequest req,
    [DaprState(StateStore = "statestore", Key = "{key}")] string state,
    ILogger log)
{
    log.LogInformation("C# HTTP trigger function processed a request.");

    return new OkObjectResult(state);
}
```

Dapr Workflows

Activate Logic Apps workflows from Dapr

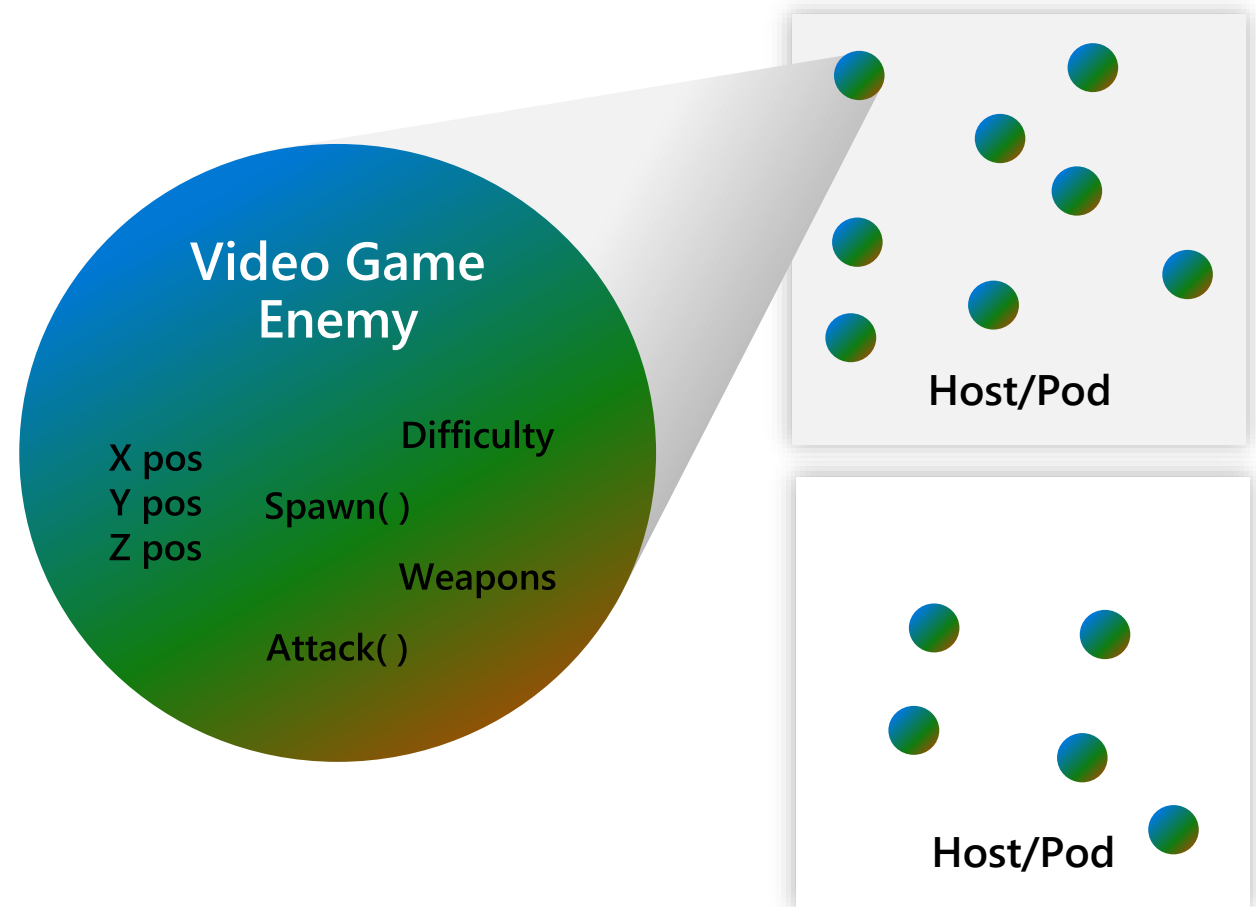


Virtual Actors with Dapr

Stateful, objects of storage and compute

Dapr Actor features:

- ✓ Distribution and failover
- ✓ Turn-based concurrency
- ✓ State management
- ✓ Timers
- ✓ Reminders

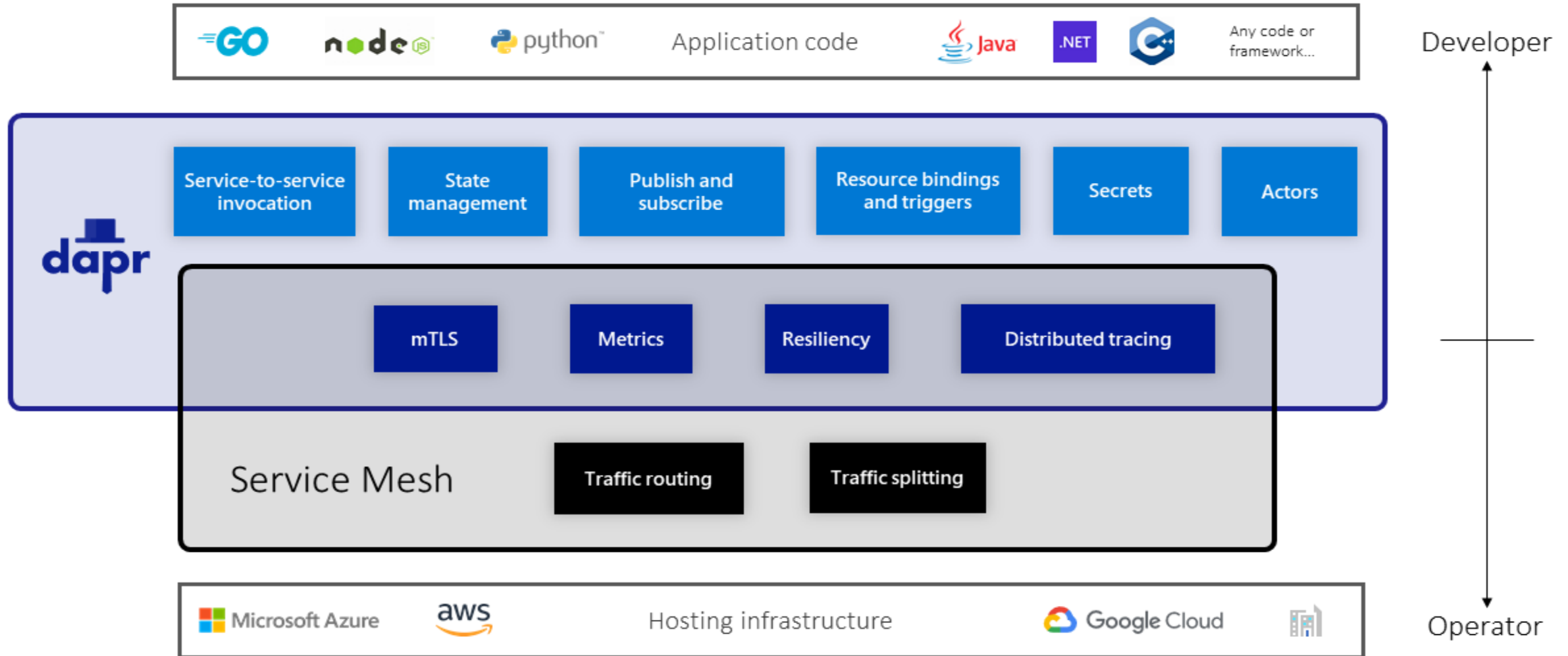


Virtually identical to Service Fabric Reliable Actors

DEMO

Dapr .NET SDK Example

Dapr vs Service Mesh



Additional Information

Dapr – <https://dapr.io>

Dapr for .NET devs - [Dapr for .NET Developers | Microsoft Docs](#)

Eshop on Dapr - <https://github.com/dotnet-architecture/eShopOnDapr>

Azure Kubernetes Service -
<https://docs.microsoft.com/en-us/azure/aks/concepts-clusters-workloads>

Service invocation performance -
<https://docs.dapr.io/operations/performance-and-scalability/perf-service-invocation/>

THANK YOU



nt konferenca
2021