Microsoft

Azure Container Apps

Why Azure Container Apps is a game-changer for cloud-native dev’s

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Azure Container Apps

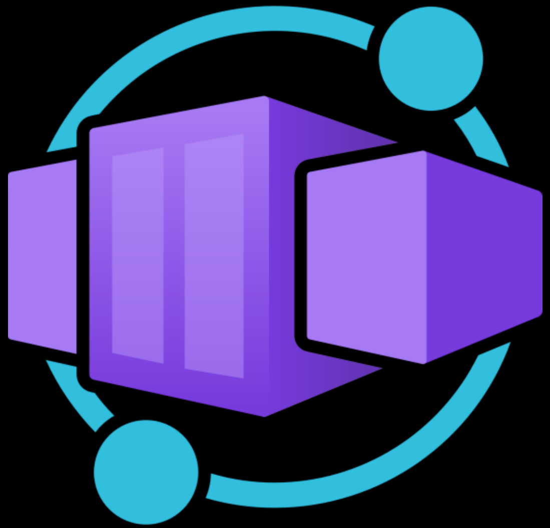
Serverless containers for microservices

Build modern apps on open source

Focus on apps, not infrastructure

Seamlessly port to Kubernetes

Kubernetes KEDA DAPR Envoy



Run containers, at scale

Accelerate developer productivity

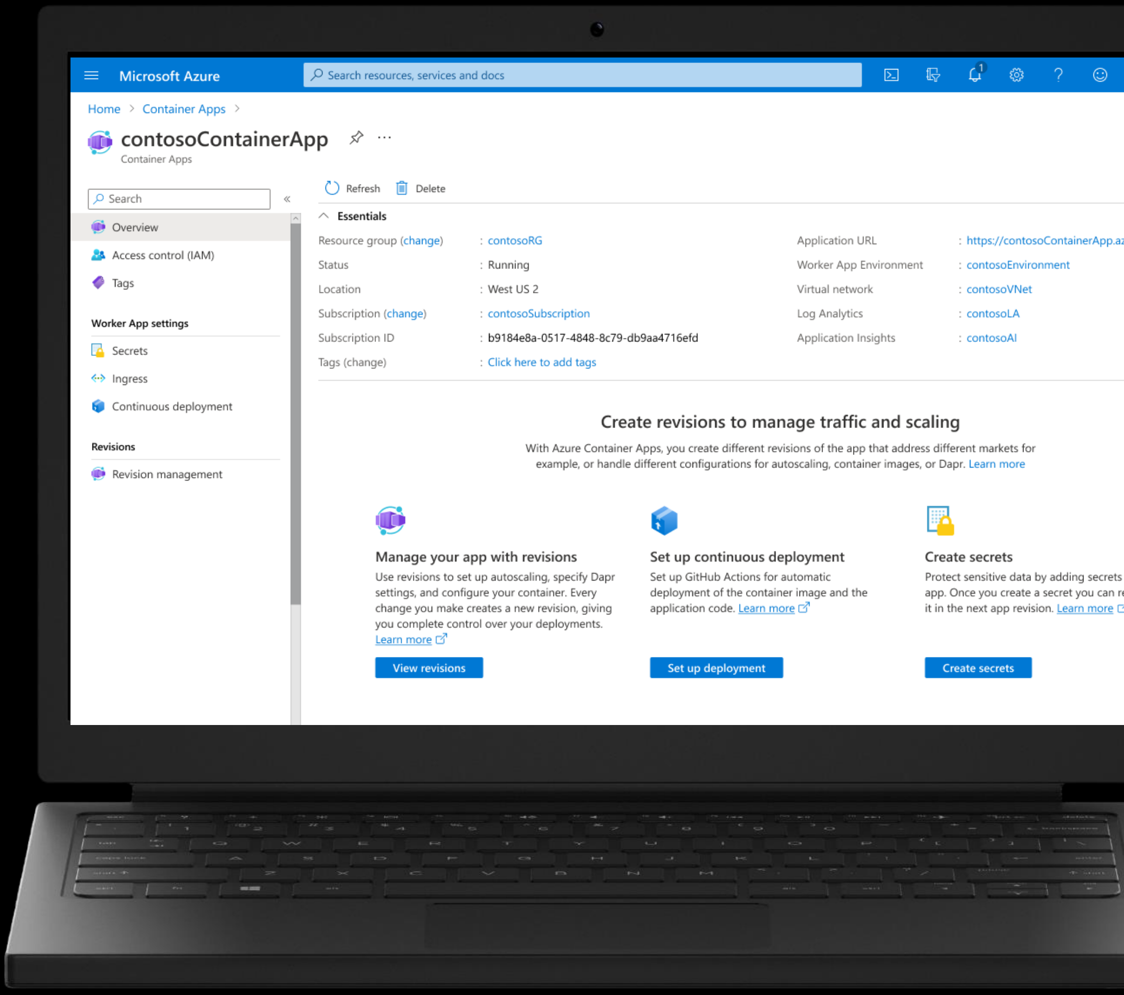
Build modern apps on open-source

Scale with flexible serverless containers

Run containers and scale in response to HTTP traffic or a growing list of KEDA-supported scale triggers including Azure Event Hub, Apache Kafka, RabbitMQ Queue, MongoDB, MySQL, and PostgreSQL

Get robust autoscaling capabilities without the overhead of managing complex infrastructure.

Scale to zero and pay for only what you use, by the second.



contosoContainerApp

Container Apps

Essentials

Resource group (change)	: contosoRG	Application URL	: https://contosoContainerApp.az
Status	: Running	Worker App Environment	: contosoEnvironment
Location	: West US 2	Virtual network	: contosoVNet
Subscription (change)	: contosoSubscription	Log Analytics	: contosoLA
Subscription ID	: b9184e8a-0517-4848-8c79-db9aa4716efd	Application Insights	: contosoAI
Tags (change)	: Click here to add tags		

Create revisions to manage traffic and scaling

With Azure Container Apps, you create different revisions of the app that address different markets for example, or handle different configurations for autoscaling, container images, or Dapr. Learn more

Manage your app with revisions

Use revisions to set up autoscaling, specify Dapr settings, and configure your container. Every change you make creates a new revision, giving you complete control over your deployments. Learn more

View revisions

Set up continuous deployment

Set up GitHub Actions for automatic deployment of the container image and the application code. Learn more

Set up deployment

Create secrets

Protect sensitive data by adding secrets app. Once you create a secret you can r it in the next app revision. Learn more

Create secrets

Run containers, at scale

Accelerate developer productivity

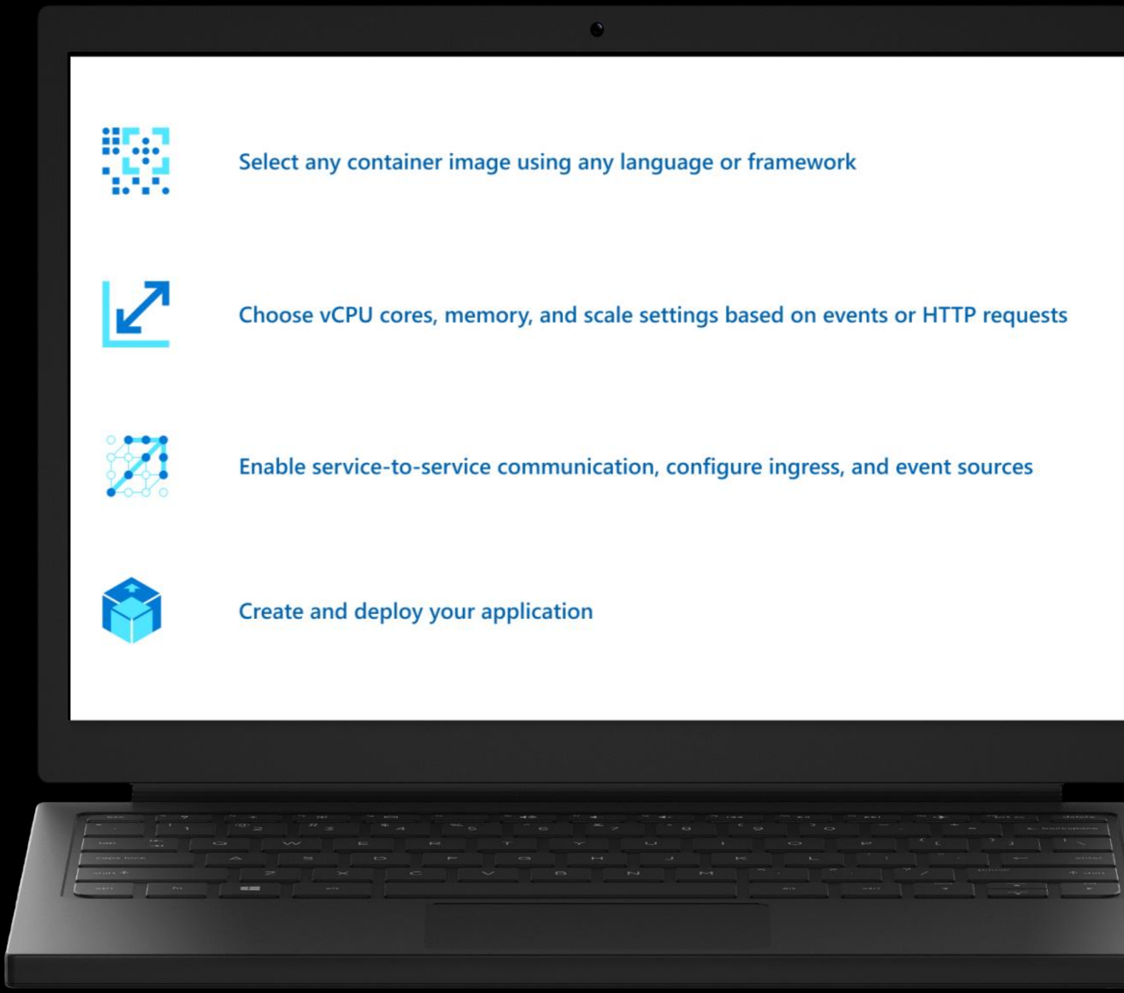
Build modern apps on open-source

Accelerate developer productivity

Build microservices, APIs, event processing workers, and background jobs using containers.

Write code in your favorite programming language and accelerate development with built-in Distributed Application Runtime (Dapr) integration to simplify common tasks like event processing, pub/sub, and service invocation.

Set up a code-to-cloud pipeline using GitHub Actions.



Select any container image using any language or framework

Choose vCPU cores, memory, and scale settings based on events or HTTP requests

Enable service-to-service communication, configure ingress, and event sources

Create and deploy your application

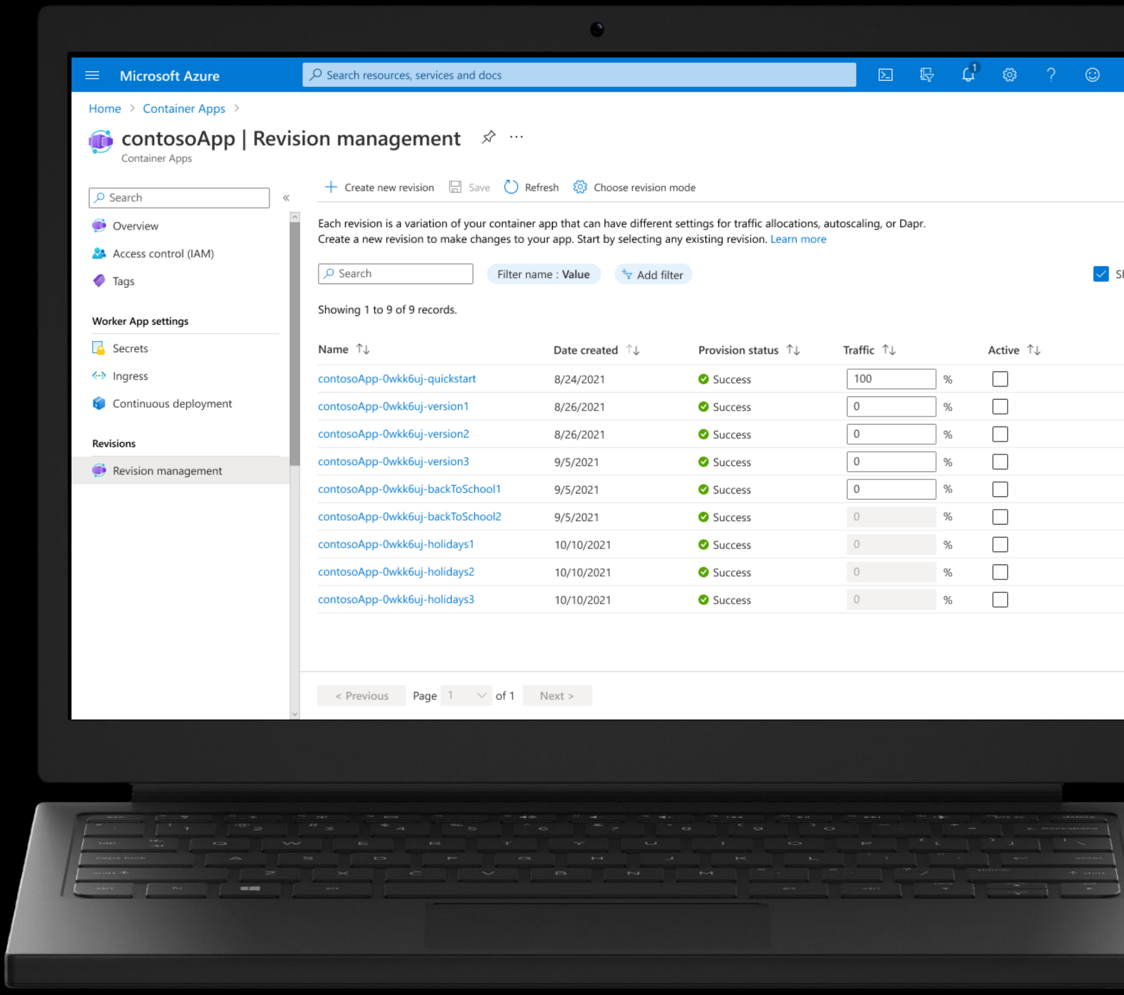
Run containers, at scale
Accelerate developer productivity
Build modern apps on open-source

Build modern apps on open-source

Create modern apps with open standards on a Kubernetes foundation and portability in mind.

Contribute directly to OSS projects to influence product capabilities.

Rely on streamlined application lifecycle tasks such as application upgrades and versioning, traffic shifting, service discovery, and monitoring.

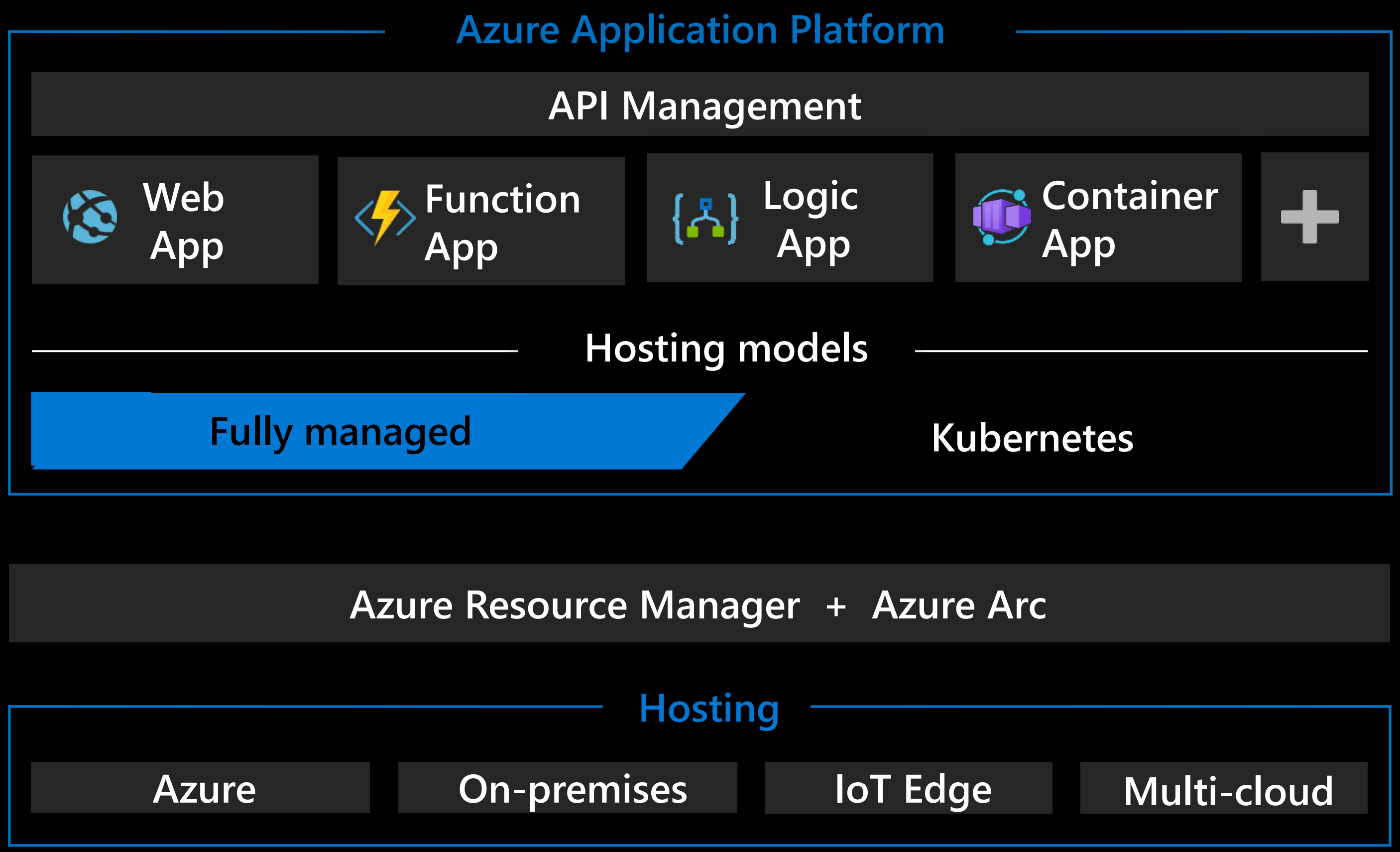


Each revision is a variation of your container app that can have different settings for traffic allocations, autoscaling, or Dapr. Create a new revision to make changes to your app. Start by selecting any existing revision. Learn more

Showing 1 to 9 of 9 records.

Name ↑↓	Date created ↑↓	Provision status ↑↓	Traffic ↑↓		Active ↑↓
contosoApp-0wkk6uj-quickstart	8/24/2021	✓ Success	100	%	□
contosoApp-0wkk6uj-version1	8/26/2021	✓ Success	0	%	□
contosoApp-0wkk6uj-version2	8/26/2021	✓ Success	0	%	□
contosoApp-0wkk6uj-version3	9/5/2021	✓ Success	0	%	□
contosoApp-0wkk6uj-backToSchool1	9/5/2021	✓ Success	0	%	□
contosoApp-0wkk6uj-backToSchool2	9/5/2021	✓ Success	0	%	□
contosoApp-0wkk6uj-holidays1	10/10/2021	✓ Success	0	%	□
contosoApp-0wkk6uj-holidays2	10/10/2021	✓ Success	0	%	□
contosoApp-0wkk6uj-holidays3	10/10/2021	✓ Success	0	%	□

Azure Dev Compute



Azure Application Platform

API Management

Web App

Function App

Logic App

Container App

+

Hosting models

Fully managed

Kubernetes

Azure Resource Manager + Azure Arc

Hosting

Azure

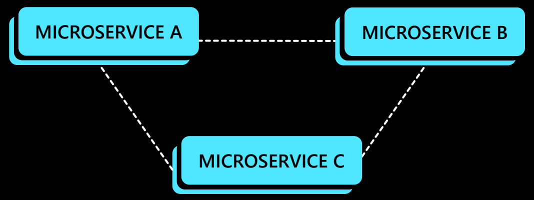
On-premises

IoT Edge

Multi-cloud

What can you build with Azure Container Apps?

Microservices



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

AUTO-SCALE CRITERIA

Individual microservices can scale independently using any KEDA scale triggers

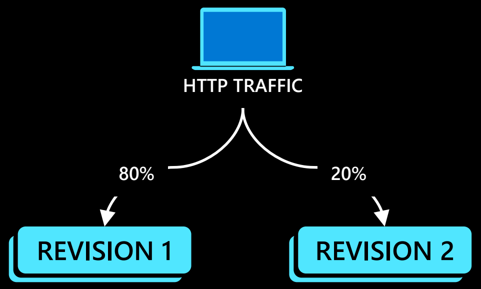
Event-driven processing

E.g. 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

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

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

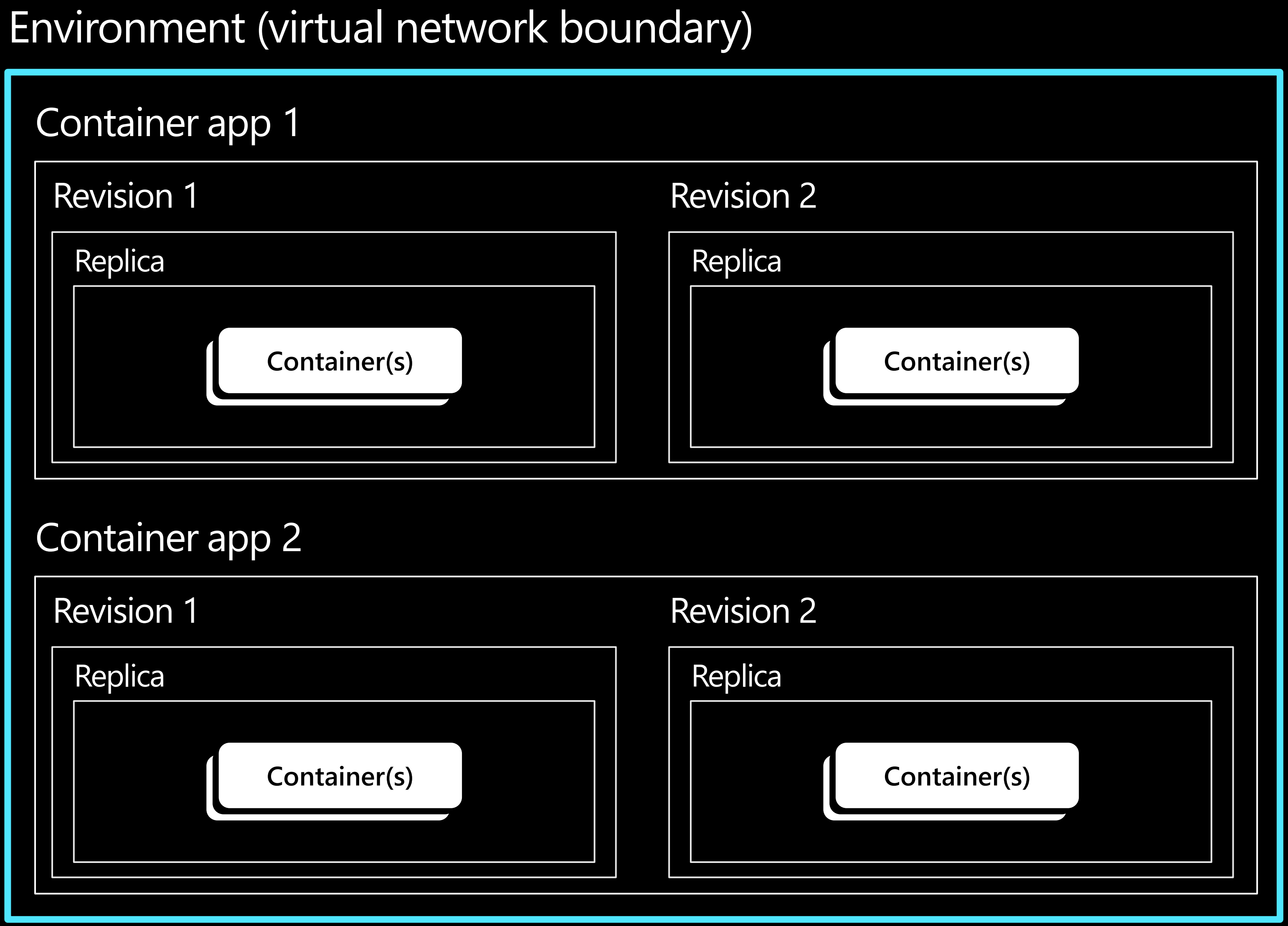
AUTO-SCALE CRITERIA

Scaling is determined by the level of CPU or memory load

Demo

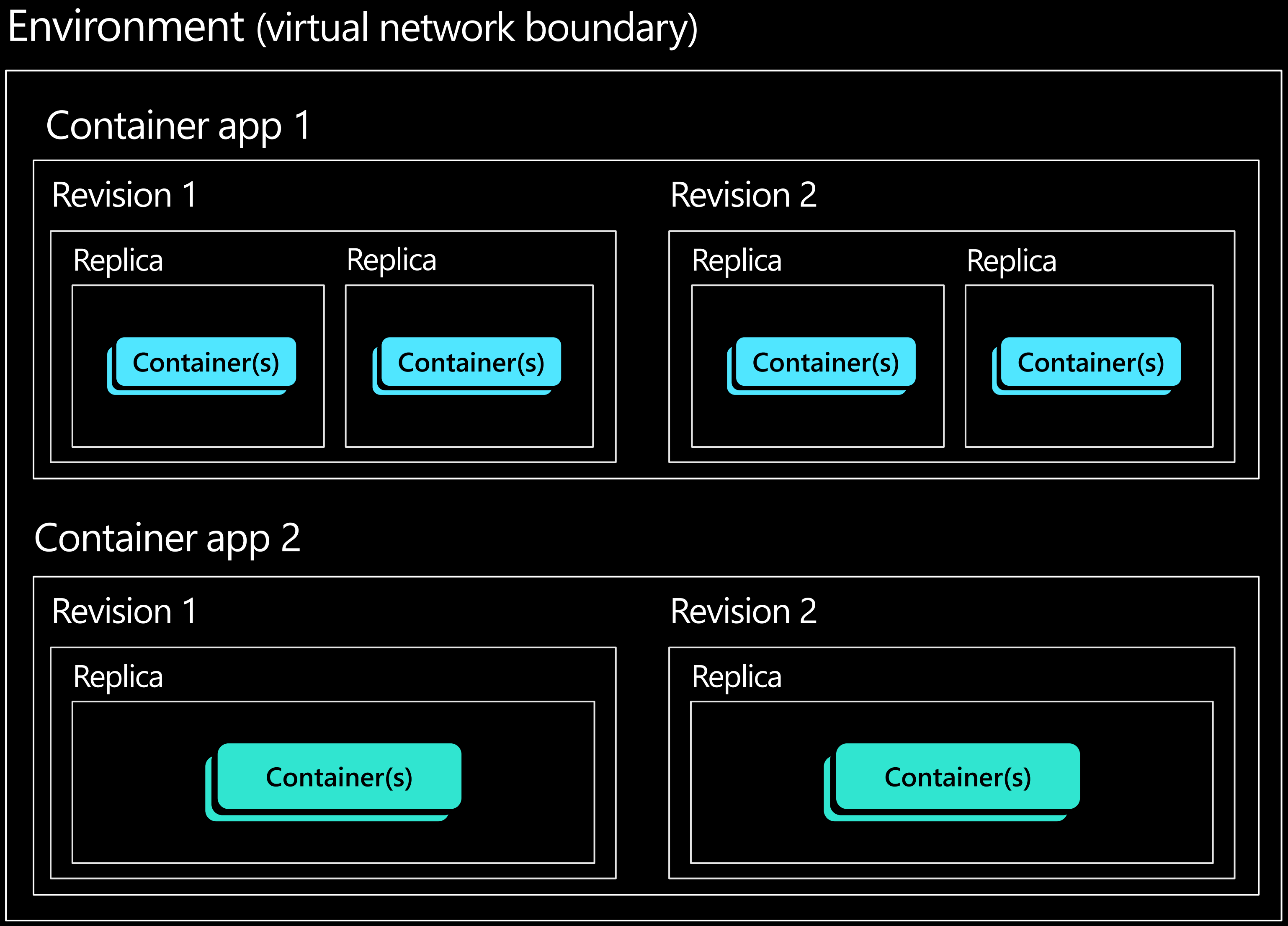
Environments

Environments define an isolation and observability boundary around a collection of container apps deployed in the same virtual network



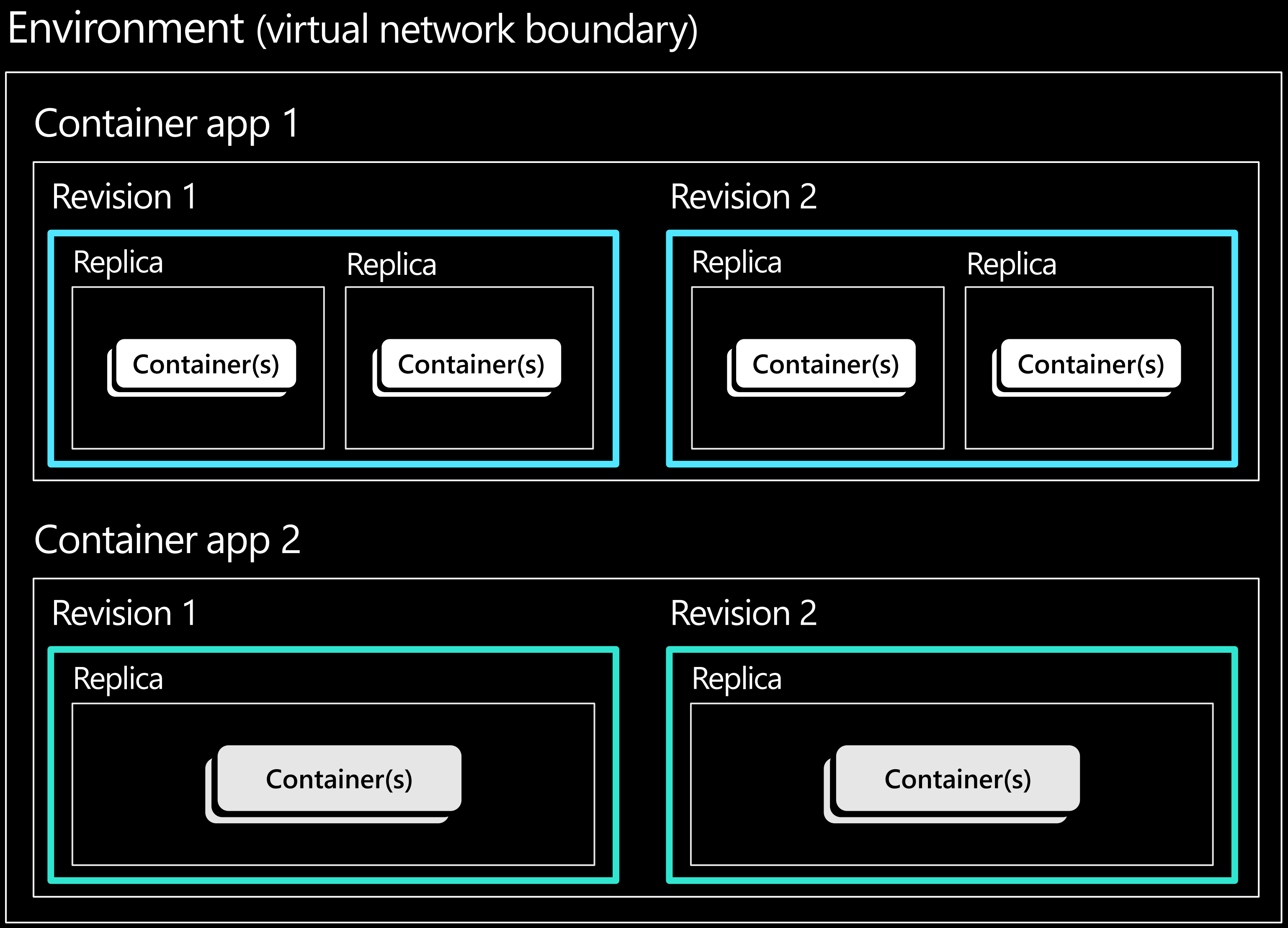
Containers

Containers in Azure Container Apps can use any and development stack of your choice



Revisions

Revisions are immutable version snapshots of a container app



Environment (virtual network boundary)

Container app 1

Revision 1

Replica

Container(s)

Replica

Container(s)

Revision 2

Replica

Container(s)

Replica

Container(s)

Container app 2

Revision 1

Replica

Container(s)

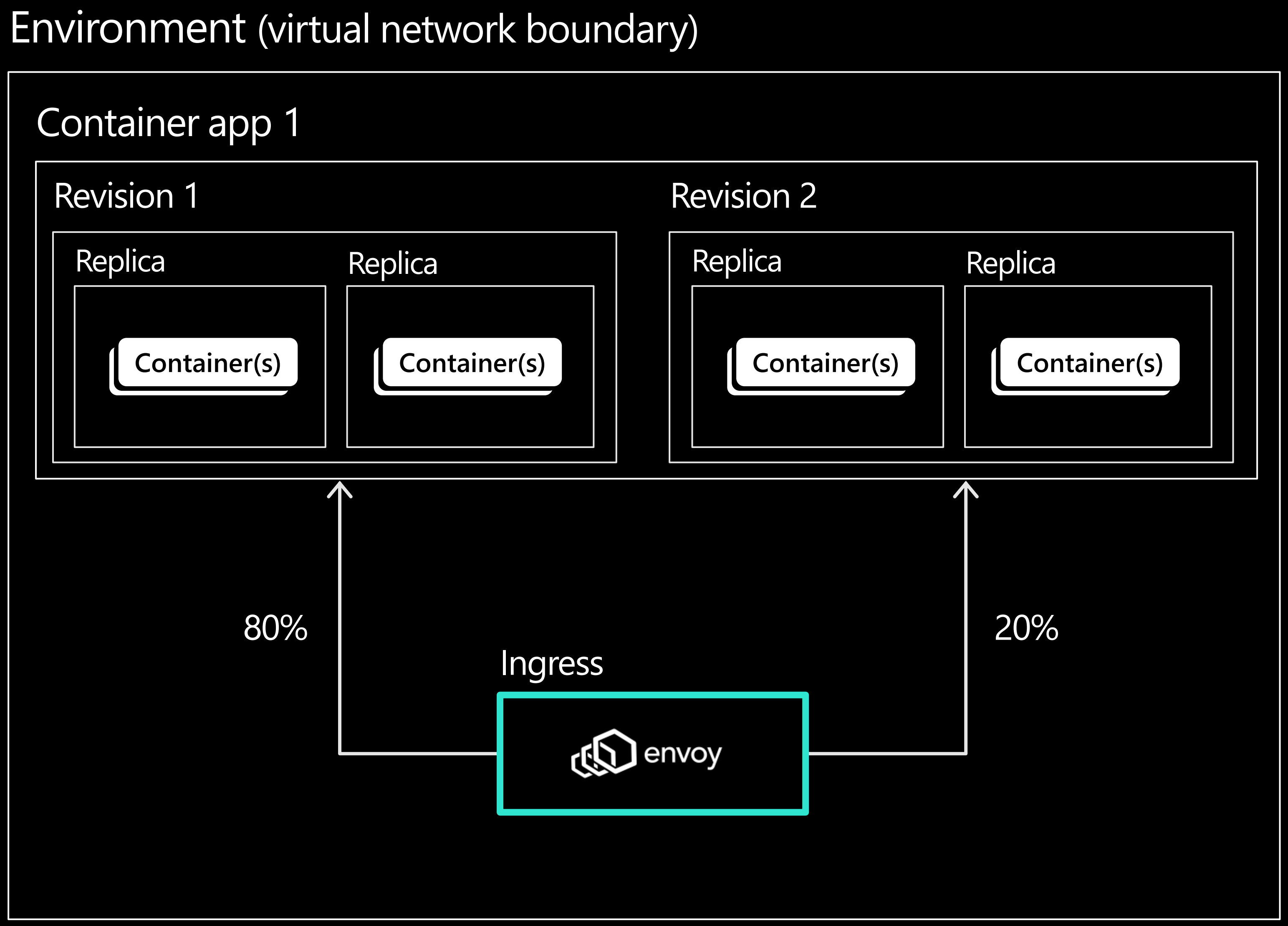
Revision 2

Replica

Container(s)

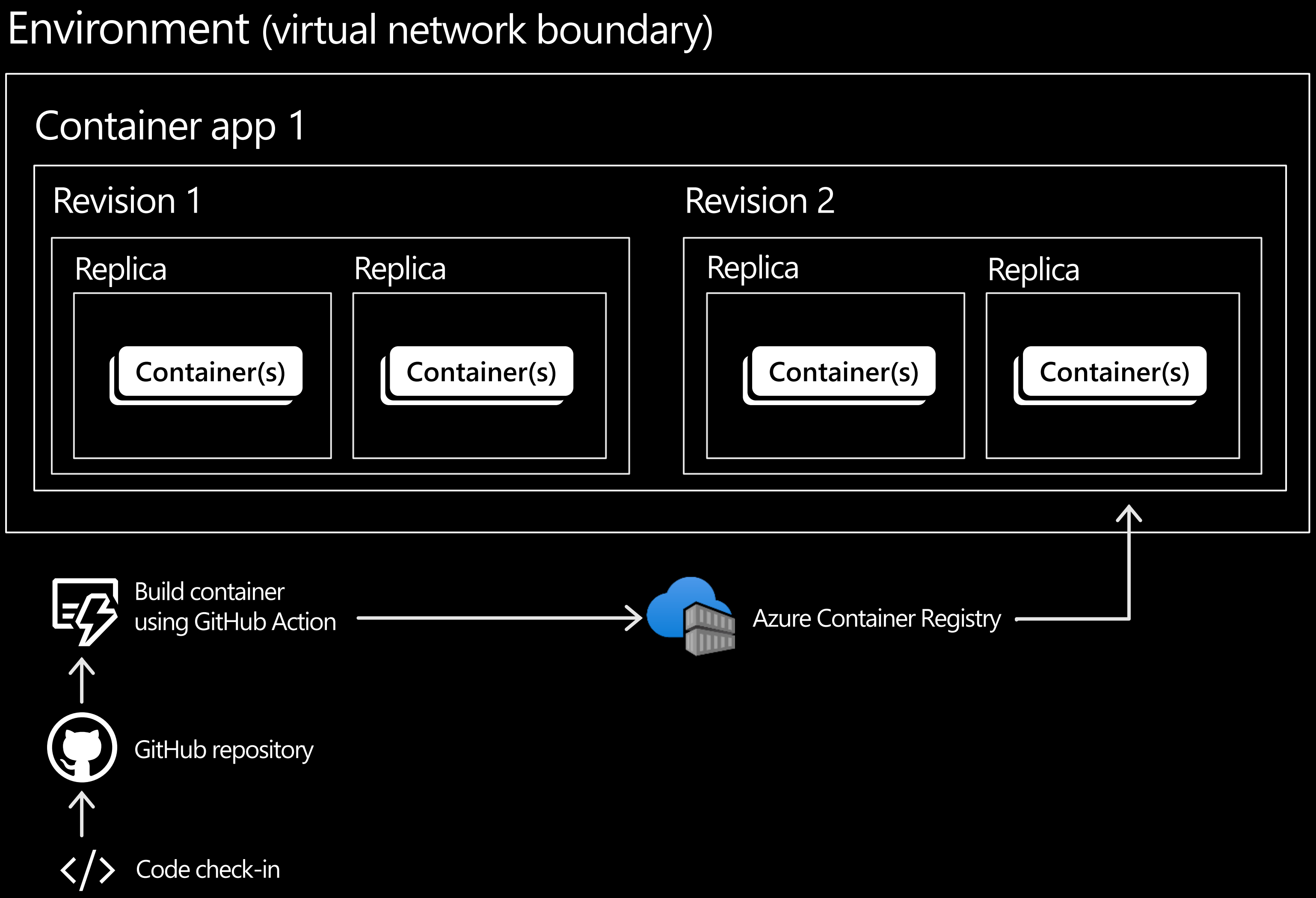
Ingress

Internal or external visibility with TLS termination and support for HTTP/1.1 and HTTP/2



GitHub Actions integration

Publish revisions as commits are pushed to your GitHub repository by triggering a GitHub Action to build a new container image



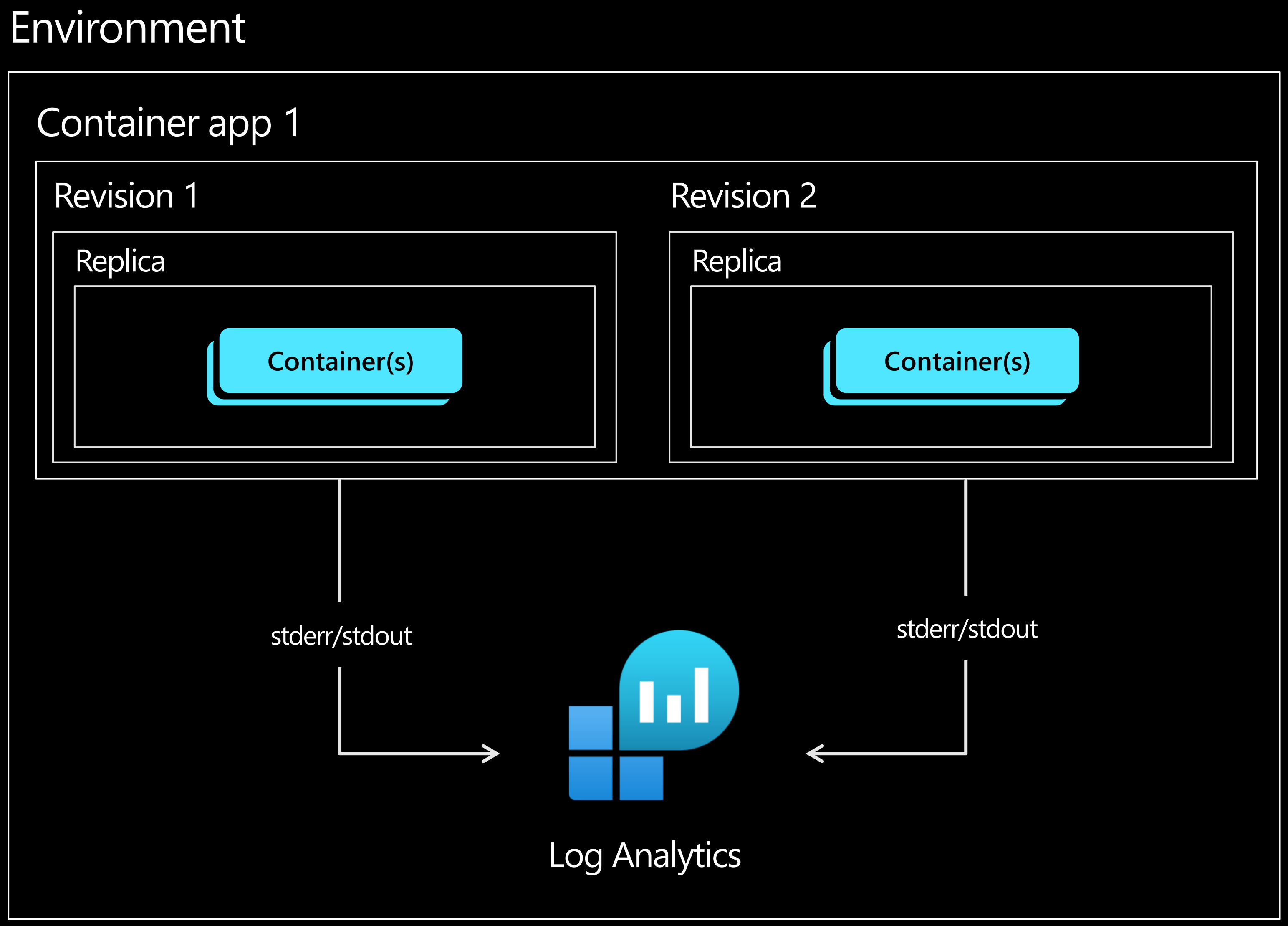
Secrets management

Securely store sensitive configuration elements that are then available to containers through environment variables, scale rules, and Dapr

```
"template": {
    "containers": [
        {
            "image": "myregistry/myQueueApp:v1",
            "name": "myQueueApp",
            "env": [
                {
                    "name": "QueueName",
                    "value": "myqueue"
                },
                {
                    "name": "ConnectionString",
                    "secretref": "queue-connection-string"
                }
            ]
        }
    ],
}
```

Logging

Containers write logs to standard output or standard error streams surfaced via Log Analytics



Scaling and using the Kubernetes Event Driven Autoscaling (KEDA)

Application autoscaling made simple

Open-source, extensible, and vendor agnostic

KEDA

Kubernetes-based Event Driven Autoscaler

Drive the scaling of any container based on a growing list of 35+ event sources, known as: scalers

Metrics Adapter | Controller | Scaler

Event-driven

Intelligently scale your event-driven applications

Built-in scalers

Out-of-the-box scalers for various vendors, databases, messaging systems, telemetry systems, CI/CD, and more

Vendor-agnostic

Support for triggers across variety of cloud providers & products

Rich capabilities

Bring rich scaling to every workload

keda.sh

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Scaling

KEDA

HTTP

```
{
 "name": "http-rule",
  "http": {
   "metadata": {
    "concurrentRequests": 50
   }
  }
}
```

Event-driven

artemis-queue, kafka, aws-cloudwatch, aws-kinesis-stream, aws-sqs-queue, azure-blob, azure-eventhub, azure-servicebus, azure-queue, cron, external, gcp-pubsub, huawei-cloudeye, ibmmq, influxdb, mongodb, mssql, mysql, postgresql, rabbitmq, redis, redis-streams, selenium-grid, solace-event-queue, ..

CPU

```
{
 "name": "cpu-rule",
  "custom": {
   "type": "cpu",
    "metadata": {
     "type": "Utilization",
      "value": "50"
   }
  }
}
```

Memory

```
{
 "name": "mem-rule",
  "custom": {
   "type": "memory",
    "metadata": {
     "type": "AverageValue",
      "value": "512"
   }
  }
}
```

Support for scale to zero and specifying minimum/maximum replicas

Support for specifying minimum/maximum replicas

Using the Distributed Application Runtime (Dapr)

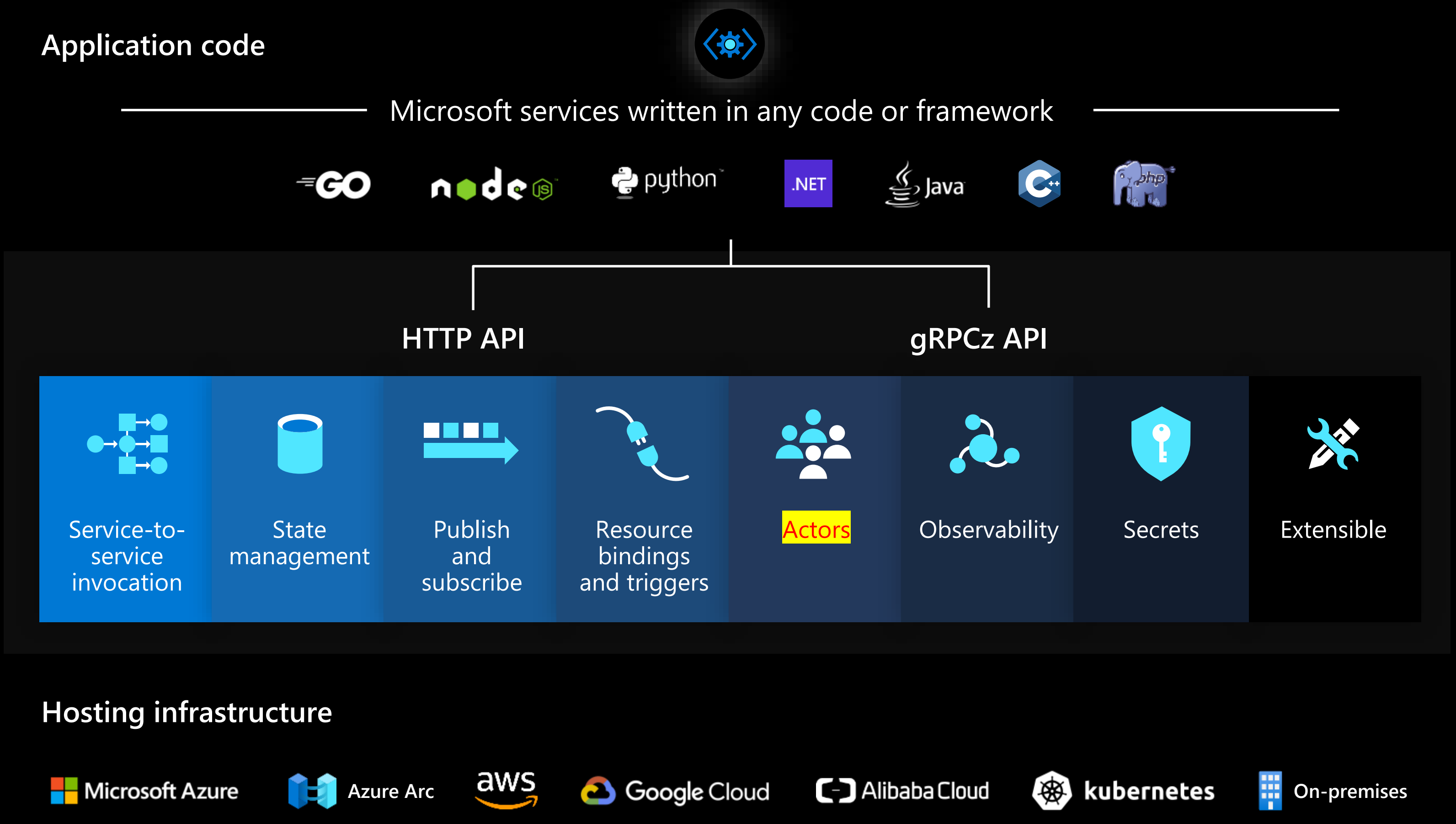
Microservices using any language or framework

Any cloud or edge infrastructure

dapr

Distributed Application Runtime

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



Application code

Microsoft services written in any code or framework

HTTP API

gRPCz API

Service-to-service invocation

State management

Publish and subscribe

Resource bindings and triggers

Actors

Observability

Secrets

Extensible

Hosting infrastructure

dapr.io

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Common microservices requirements

Service to service secure communication **(Enabled with Dapr)**

1.1 TLS encryption and mutual TLS authentication ✓

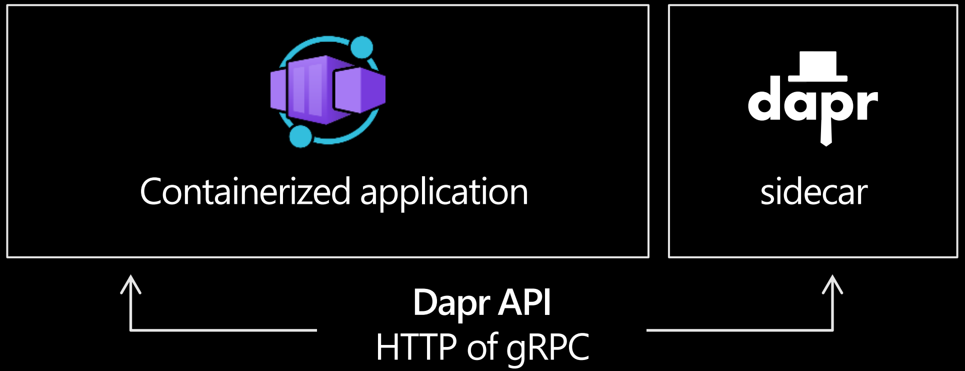
1.2 Reliability and retries ✓

1.3 Observability and distributed tracing ✓

Independent component lifecycle: versioning and scaling ✓ **(Enabled with revisions and KEDA)**

Data encapsulation and governance ✓ **(Enabled with Dapr)**

Fully managed Dapr using the sidecar model



Containerized application

sidecar

Dapr API
HTTP of gRPC

Service-to-service invocation

```
POST http://localhost:3500/v1.0/invoke/cart/method/neworder
```

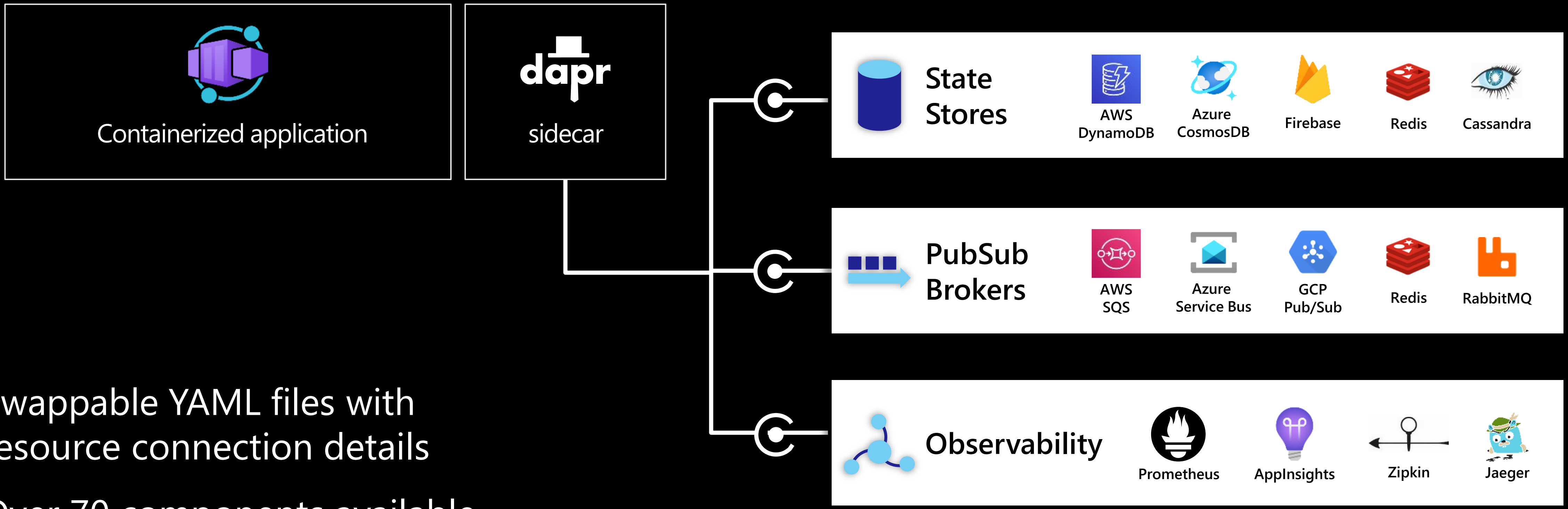
State management

```
GET http://localhost:3500/v1.0/state/inventory/item67
```

Publish and subscribe

```
POST http://localhost:3500/v1.0/publish/shipping/orders
```

Dapr components



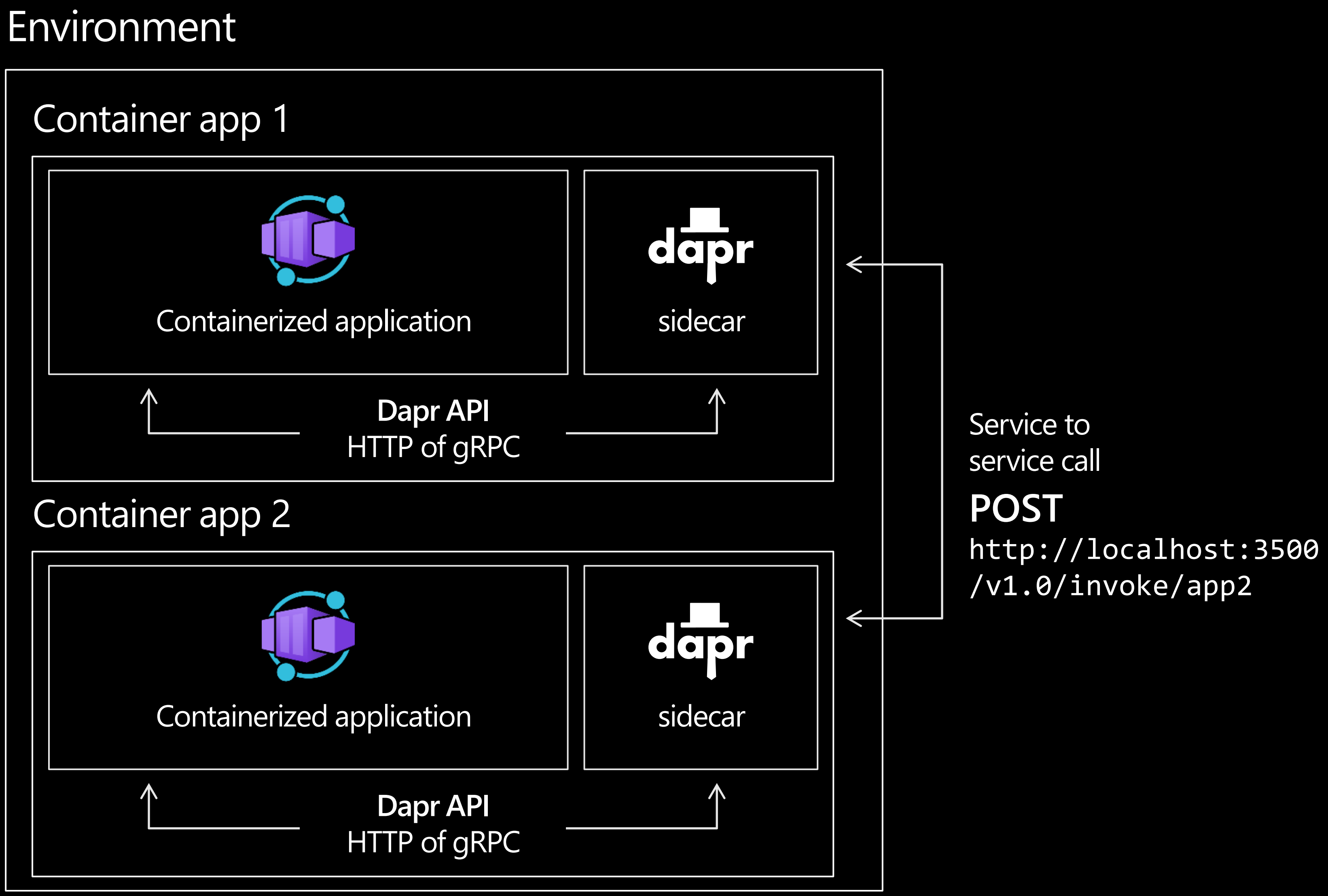
Swappable YAML files with resource connection details

Over 70 components available

Create components for your resource at:
github.com/dapr/components-contrib

Service to service invocation

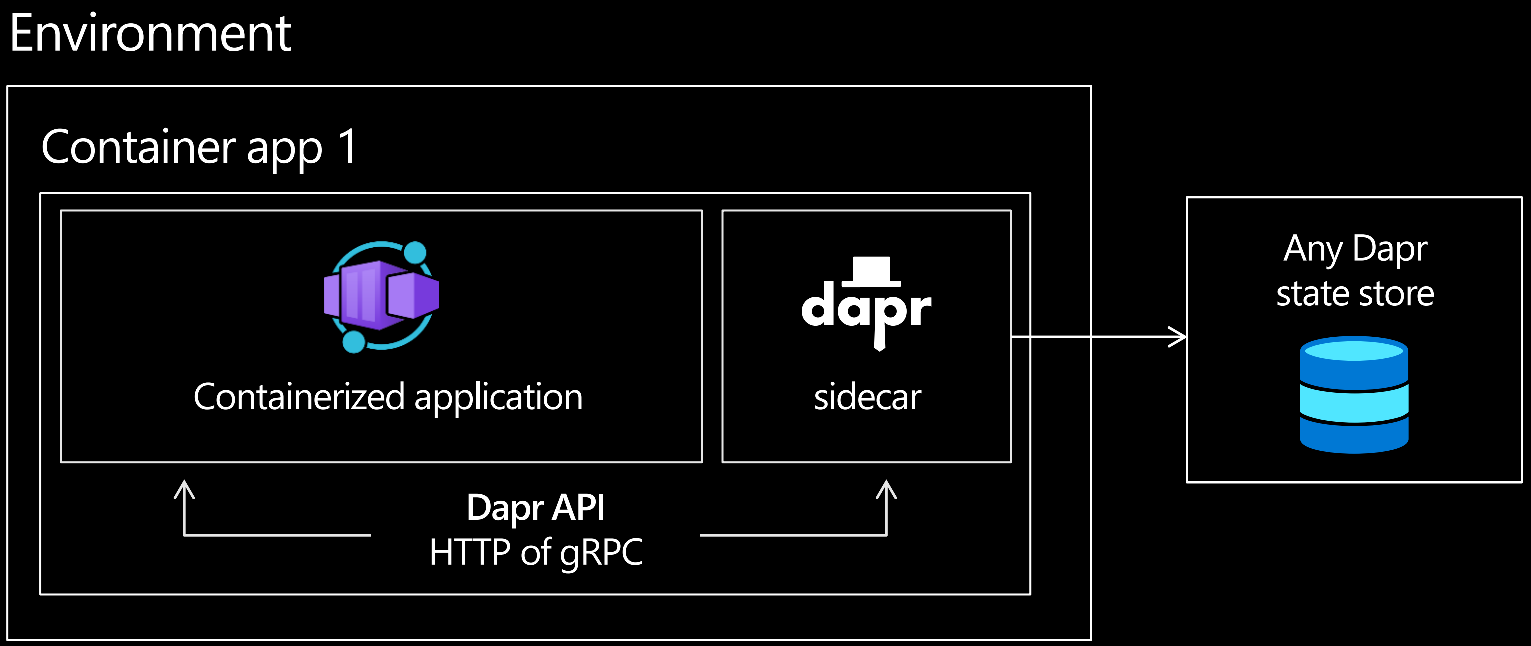
Fully managed Dapr APIs provide a rich set of capabilities and productivity gains



```
http://localhost:3500
/v1.0/invoke/app2
```

State management

Dapr provide apps with state management capabilities for CRUD operations, transactions and more



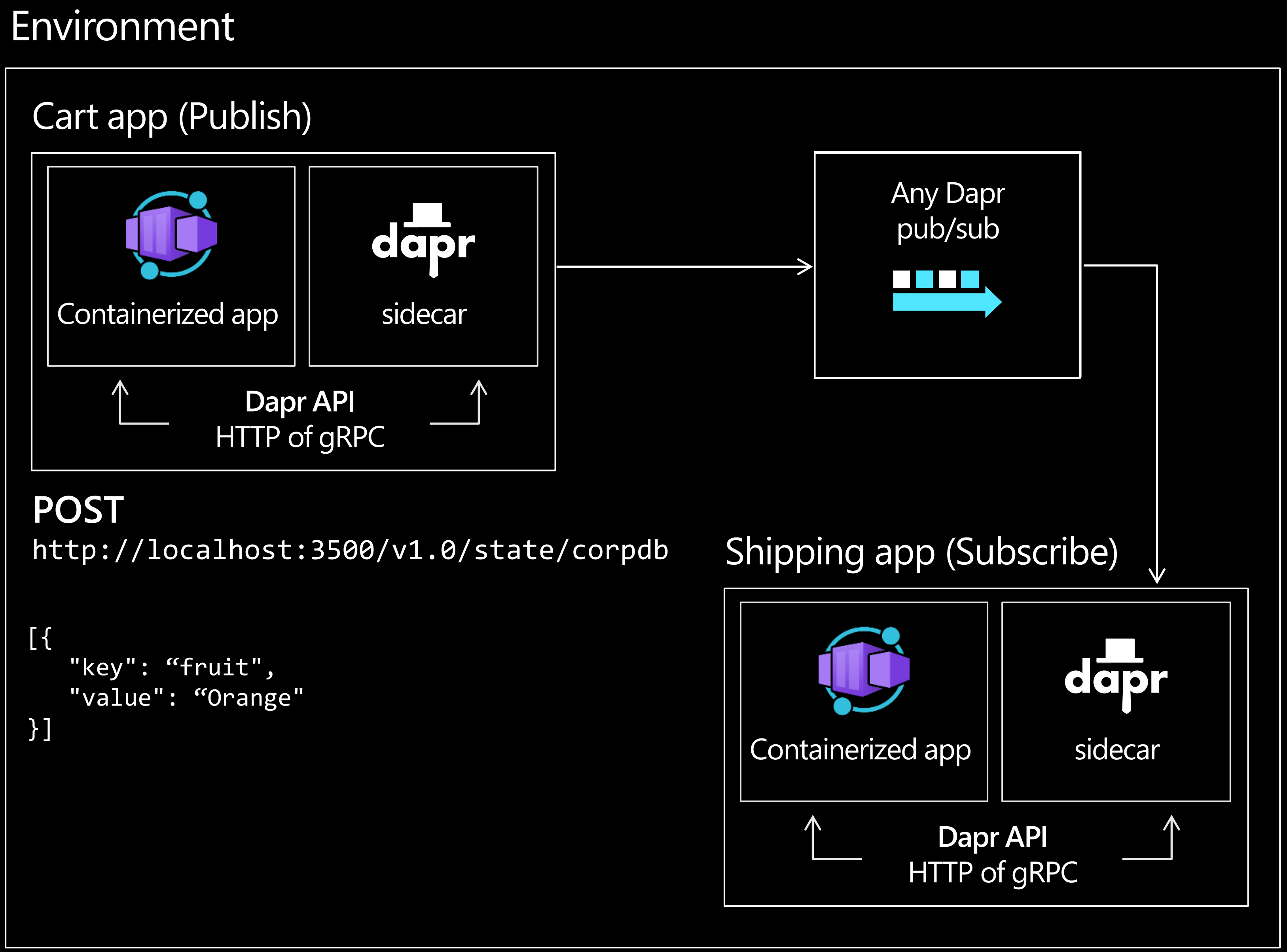
POST

```
http://localhost:3500/v1.0/state/corpdb

[{
   "key": “fruit",
   "value": “Orange"
}]
```

Publish and subscribe

Create event-driven, loosely coupled architectures where producers send events to consumers via topics.



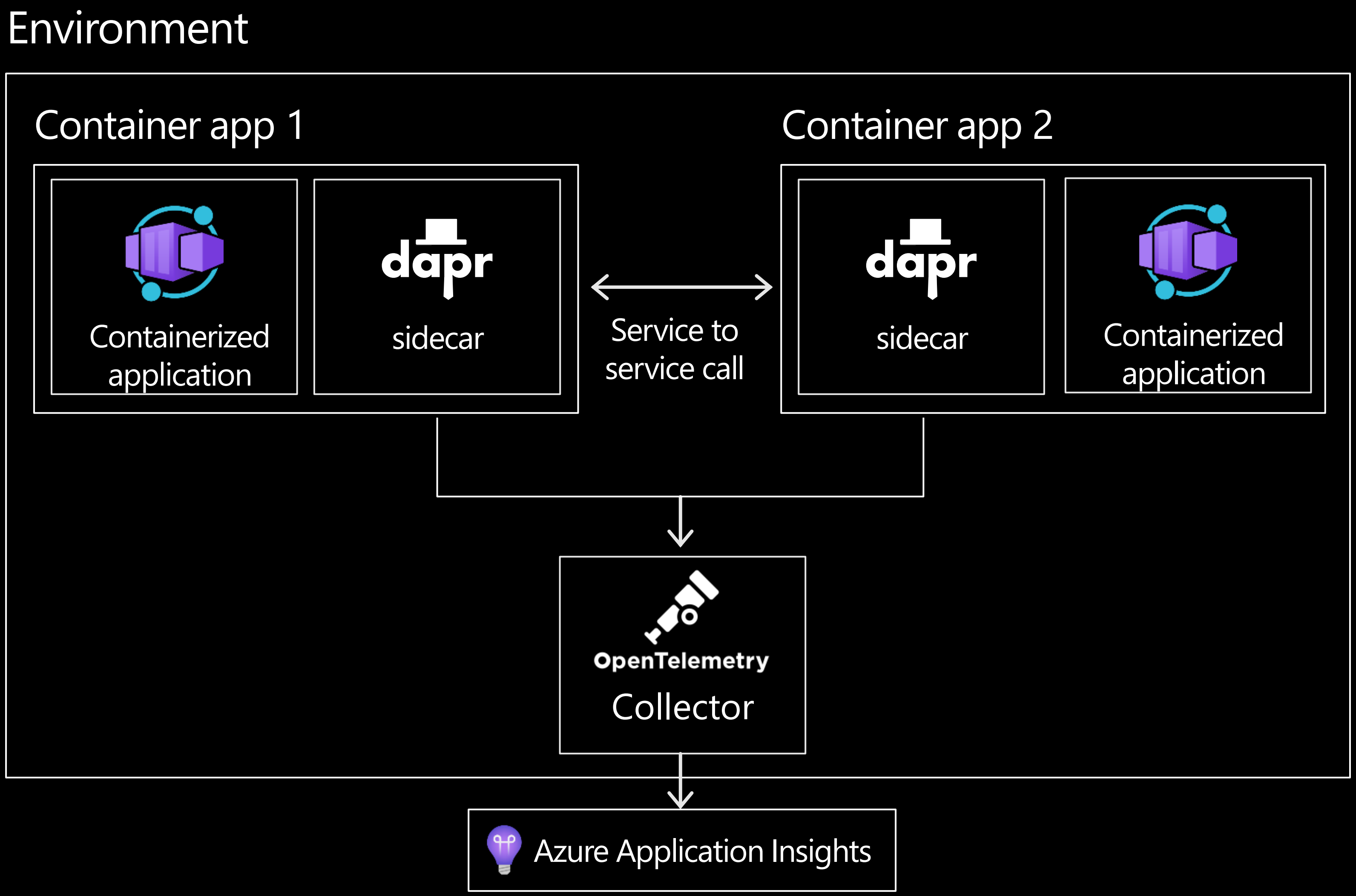
POST

```
http://localhost:3500/v1.0/state/corpdb
```

```
[{
   "key": “fruit",
   "value": “Orange"
}]
```

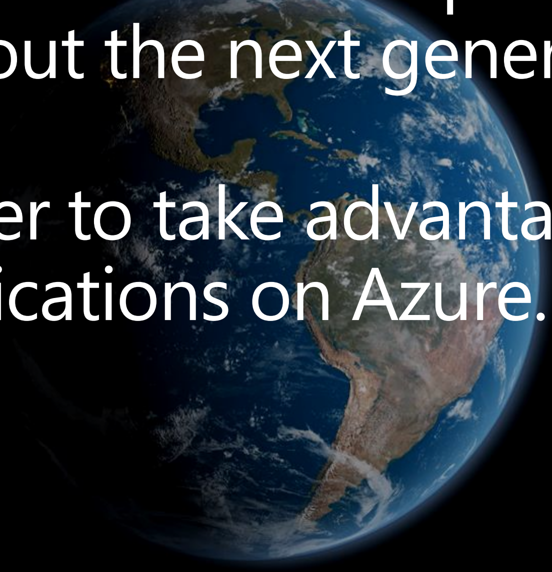
Observability

Intercept traffic and extract tracing, metrics, and logging information. Configure Azure Application Insights for distributed tracing across your services



Key takeaway:

-latest innovation on cloud native and open source
-shared exciting news about the next generation of containers and serverless apps
-empower every developer to take advantage of flexible choices to create microservices applications on Azure.



Get started with Azure Container Apps today https://aka.ms/containerapps

Developer view – what are you trying to build?

What are your trying to build?	How?
Microservices without specific language affinity	Azure Container Apps
Kubernetes ecosystem-based app	AKS
Web \ API applications	Azure App Service
SPAs (React, JAMstack)	Static Web Apps
Event Driven Applications	Azure Functions
Java Spring apps, APIs and microservices with Tanzu DevEx	Azure Spring Cloud
Microservices with OpenShift DevEx	Azure Red Hat OpenShift
PaaS \ special purpose platform	Azure Container Instances

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Q&A

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