
Xnet
ORGANIZER
THRIVE
CONFERENCE
Azure Container Apps
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Professional

C# and .NET 2021 Edition

Christian Nagel

- Training
- Coaching
- Consulting
- Development

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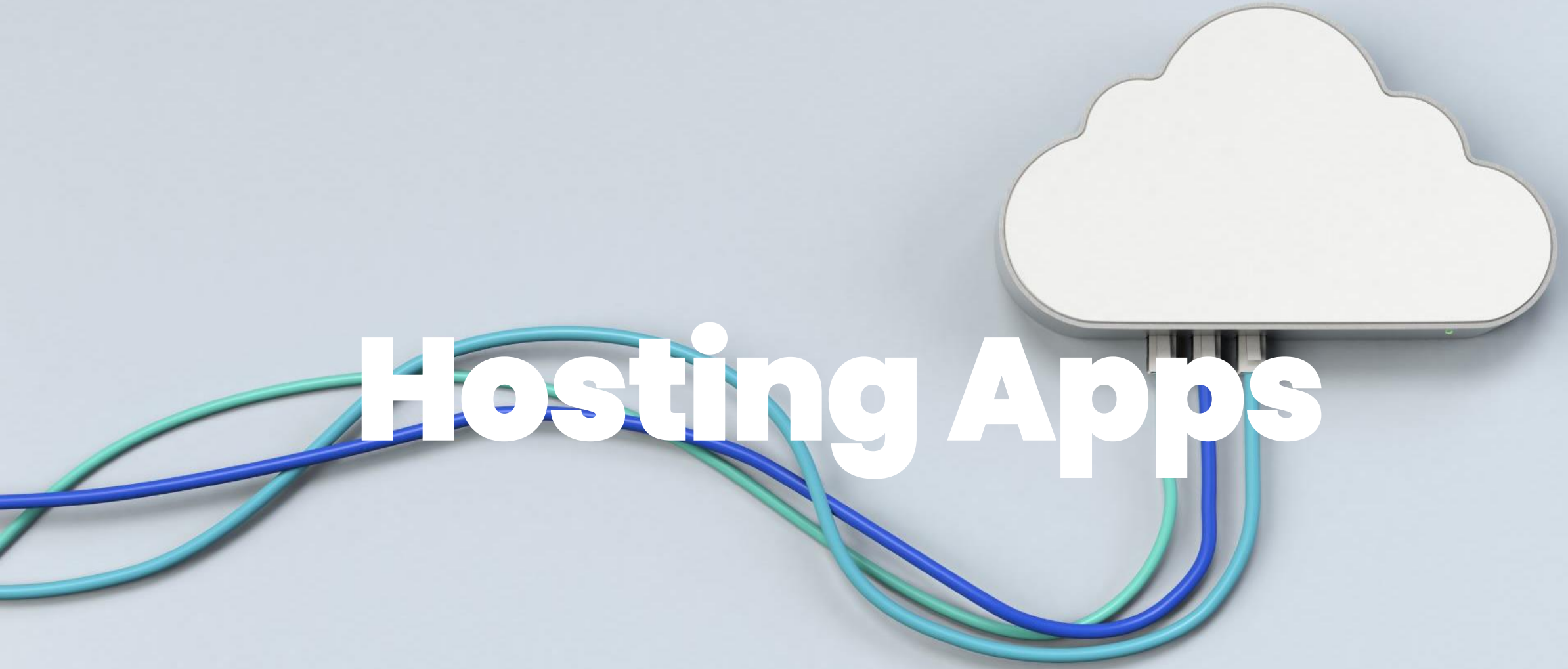
ern information technologies at the top event in Slovenia

Topics

- Hosting Apps – Options with Microsoft Azure
- Azure Container Apps Concepts
- Azure Container Apps in Action



Hosting Apps

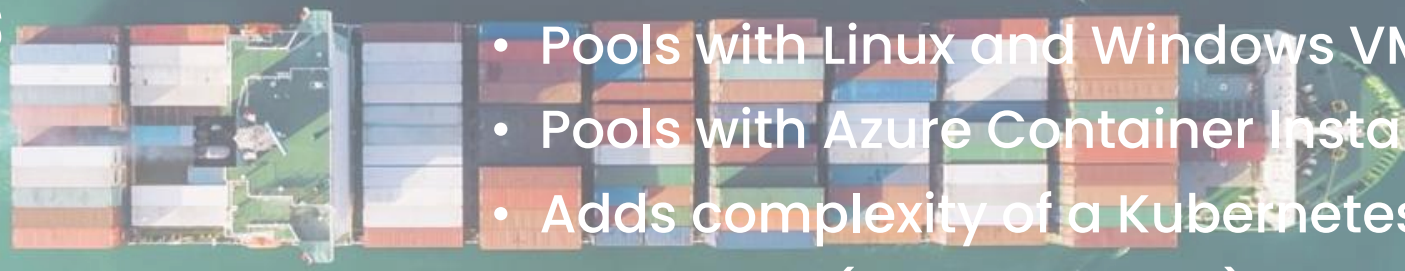
Azure App Services

- Windows or Linux
- Code or Docker
- Web Apps and Services
- Cost based on App Service plan
- Built-in features
- Auto scaling

Azure Container Instances

- Host Docker Images
- Runs Window or Linux images
- Container groups – run multiple images
- Specify CPU and memory on startup
- Faster startup than a Virtual Machine
- Pay for the seconds it runs
- To trigger startup, you can use Logic Apps

Azure Kubernetes Services



- Managed Kubernetes Cluster
- Container orchestrator
- Pay for the agent nodes
- Pools with Linux and Windows VMs
- Pools with Azure Container Instances
- Adds complexity of a Kubernetes cluster
- dotnet tye (Alpha version) helps deploying

Azure Functions

- Consumption based plan
- Windows (code only) or Linux
- Code or Docker container
- Trigger on events (HTTP requests, timers, queues, events, database...)
- Scales automatically (up to 200 instances / consumption)
- Timeouts based on plan
- .NET isolated or in-process

Azure Container Apps

Consumption based plan

Linux containers

Trigger on events (HTTP requests, timers, queues, events, database…)

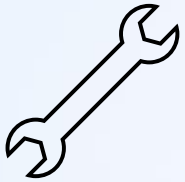
Abstracts Kubernetes environments

Scaling from zero to …


Azure
Container
Apps

Create an Environment

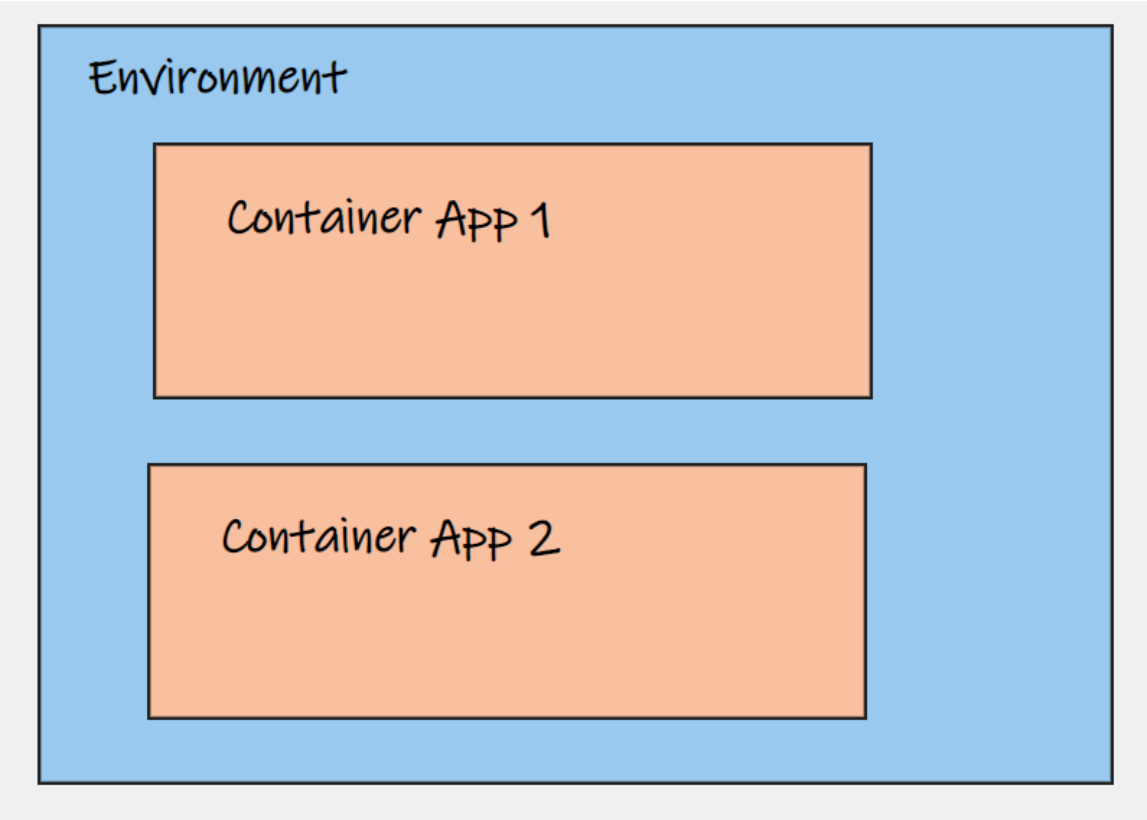
```
az containerapp env create \
  --name 'my-env' \
  --resource-group 'my-group' \
  --logs-workspace-id $LOG_CLIENT_ID \
  --logs-workspace-key $LOG_CLIENT_SECRET \
  --location $LOCATION \
  --query provistioningState
```



Demo:
Creating an Azure Container Environment

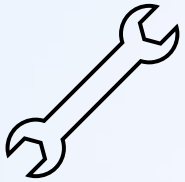
Environment

- Isolation boundary around container apps
- Apps are deployed to environments
- You can use your VNET deploying an environment
- Log Analytics



Create an App

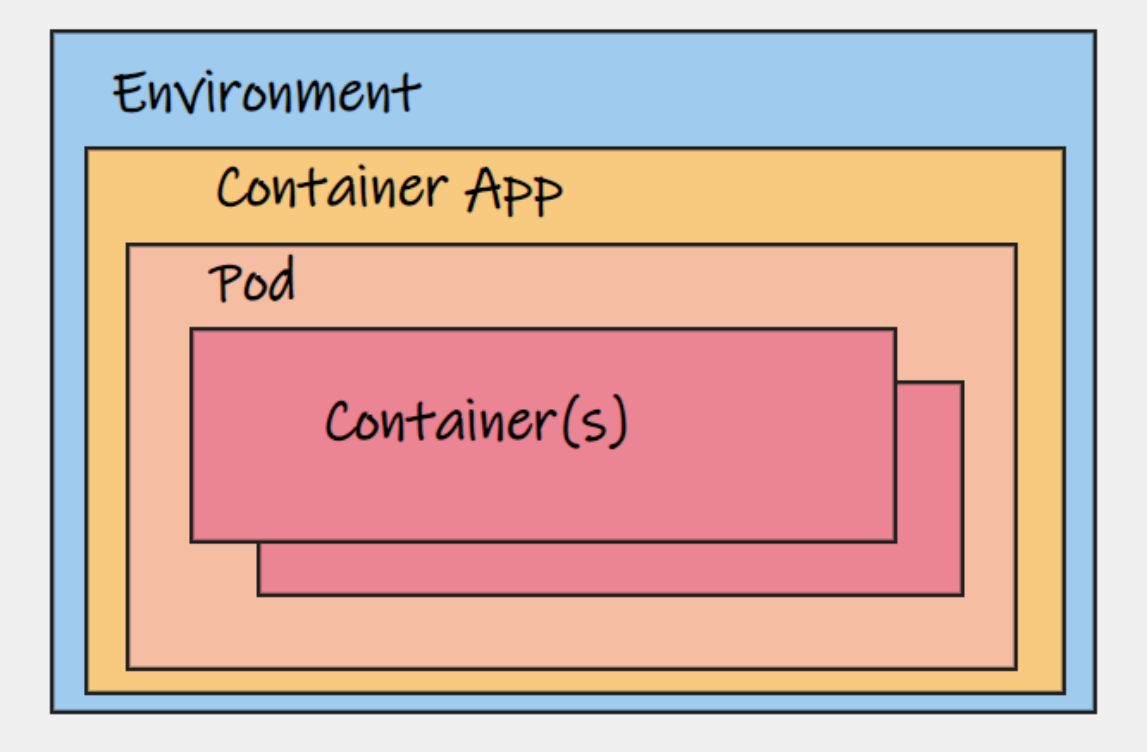
```
az containerapp create \
  --name 'myapp' \
  --resource-group 'my-group' \
  --environment 'my-env' \
  --image myimages.azurecr.io/app:v1.0 \
  --target-port 80 \
  --ingress 'external' \
  --query configuration.ingress.fqdn
```



Demo:
Creating an Azure Container App

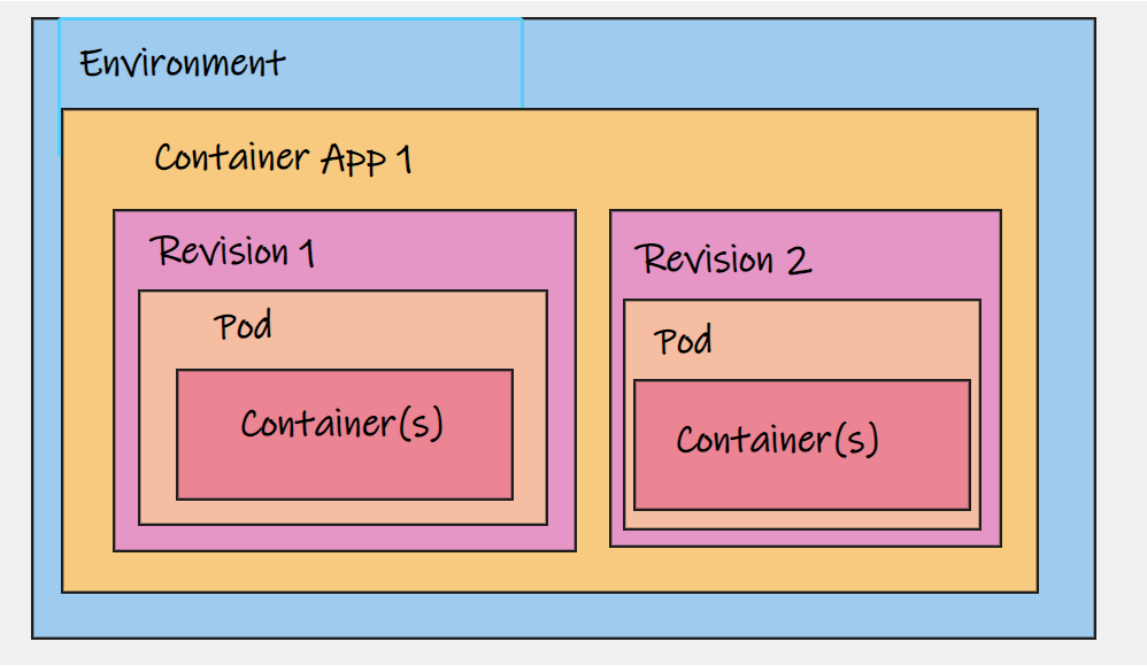
Containers

- Containers grouped in pods
- Share the same disk and network resources
- Same application lifecycle
- Allocate CPU/memory with app

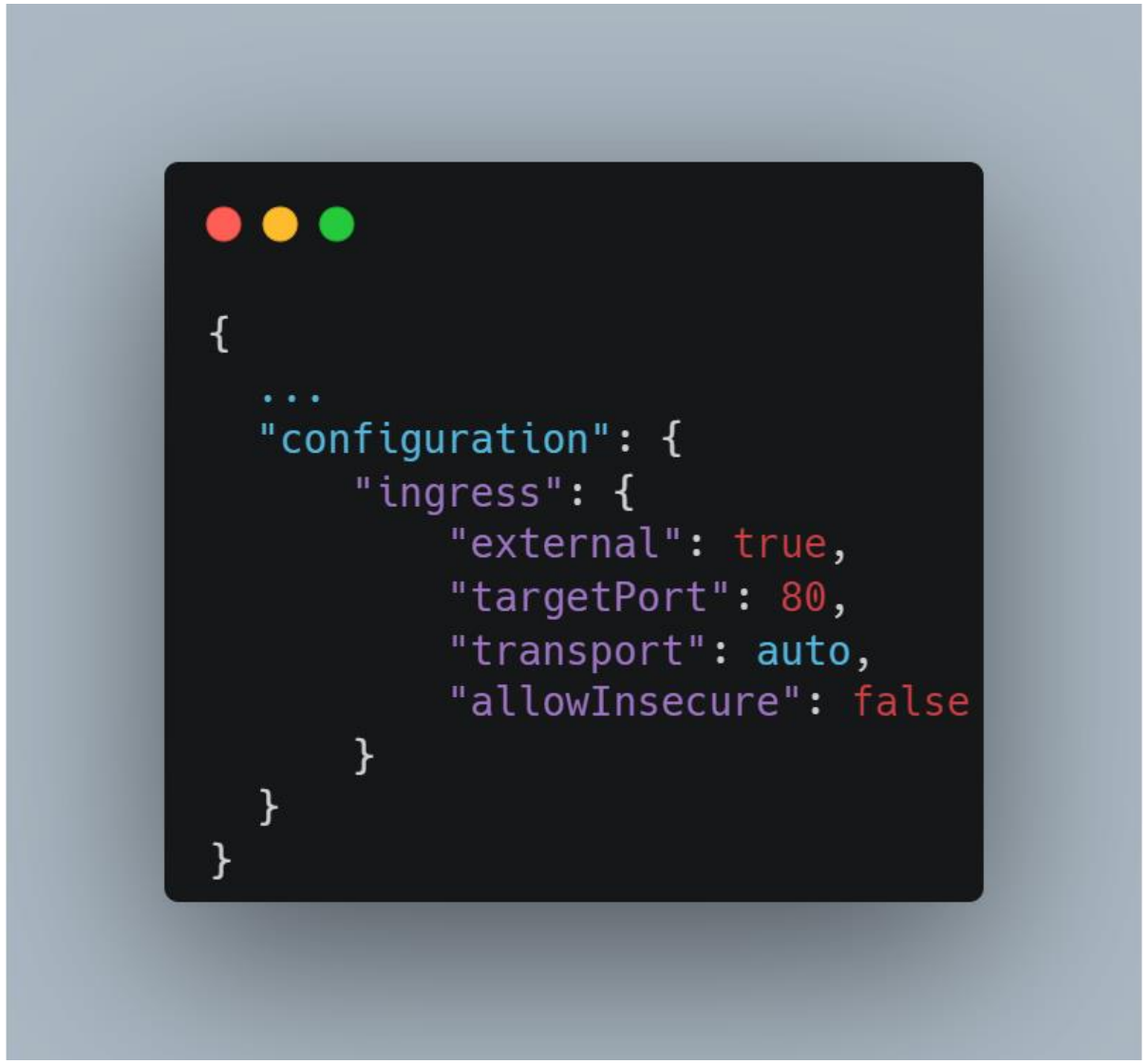


Revisions

- Immutable snapshot of container app
- First revision created on app
- New revisions created with updates
- No charging for inactive revisions



Ingress


{
...
"configuration": {
"ingress": {
"external": true,
"targetPort": 80,
"transport": auto,
"allowInsecure": false
}
}
}

Scaling

- KEDA (Kubernetes Event-driven Autoscaler, https://keda.sh)
- Scaling to zero or dozens of containers
- Triggers
  - CPU
  - Memory
  - HTTP
  - Events

Jobs (Preview)

- Easy way to trigger
- Uses KEDA
- Manual
- Schedule
- Event

Continuous Deployment

- Azure Portal
- Visual Studio
- Visual Studio Code Extensions

- ARM templates/bicep
- az CLI, Powershell

dapr

- Distributed application runtime
- for resilient, stateless, stateful microservices
- Sidecar images and building blocks
- Go, node, python, .NET, Java, C++…
- Add-in with Azure Container Apps

Cost

Requests

- €0.508 per million, 2 million free

Resource

- VCPU (free: 180.000 VCPU-seconds)
  - € 0.0000308,- active per second
  - € 0.0000037,- idle per second
- Memory (free: 360.000 GiB seconds)
  - € 0.0000037,- active per second
  - € 0.0000037,- idle per second
- Idle – faster startup with scaling from 1 instead 0

Take away

- Comparing Azure Container Apps other hosting options
- Consumption based
- Easy to use with many built-in features

More information

- Github Repos
  - https://github.com/codebreakerapp/Thrive2023
  - https://github.com/codebreakerapp/codebreakerlight
- My blog
  - https://csharp.christiannagel.com
- Dotnet Team Blog
  - https://devblogs.microsoft.com/dotnet/
- Pragmatic Microservices with .NET and Azure
  - Upcoming book from Packt Publishing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