MICROSOFT TECH CONFERENCE AUSTRIA 2022

Microsoft Enterprise Training Center

Building Apps with Azure Kubernetes Services and Azure Container Apps

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Topics

- Hosting Apps with Microsoft Azure
- Azure Kubernetes Services
- Azure Container Apps

Azure App Services

- Use Windows or Linux
- Deploy Code or Docker images
- Run Web Apps and Services
- Cost based on App Service plan
- Many built-in features
- Automatic scaling

Azure Container Instances

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

Azure Functions

- Consumption based plan (App service plans)
- Windows (code only) or Linux (code or docker)
- 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

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More…

Azure Kubernetes Services

Azure Container Apps

Moving to a Microservices Architecture?

- Implementing new features faster?

- Continuous Integration?
- Continuous Delivery?
- Docker?

What's needed?

- Hosting for Docker Containers
- Orchestration
- Load Balancing
- Monitoring
- …

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Azure Kubernetes Services

Kubernetes (K8s) Infrastructure

Control Plane

- API Server
- Configuration Database (etcd)
- Scheduler
- Controller Manager

Nodes

- Kubelet (Node Agent)
- Network Proxy
- Container Runtime

Tooling

- kubectl
- YAML Files
- helm
- ...

Azure Kubernetes Services

- Managed Kubernetes Cluster
- Container orchestrator
- Pay for the agent nodes
- Pools with Linux and Windows VMs
- Pools with Azure Container Instances
- Pools with WASI (Preview)

Project Tye (Public Incubation Project)

Making it easier for .NET
Dockerfiles, deployments, services are not required
Build and debug services locally
Publish docker images
Publish services to Kubernetes
Install: dotnet tool install microsoft.tye

Azure Kubernetes Service - Summary

- A managed version of Kubernetes
- Without the overhead to manage the cluster
- Use the well-known Kubernetes tools
- Complexity of Kubernetes

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Azure Container Apps

Preview!!!

Azure Container Apps - Intro

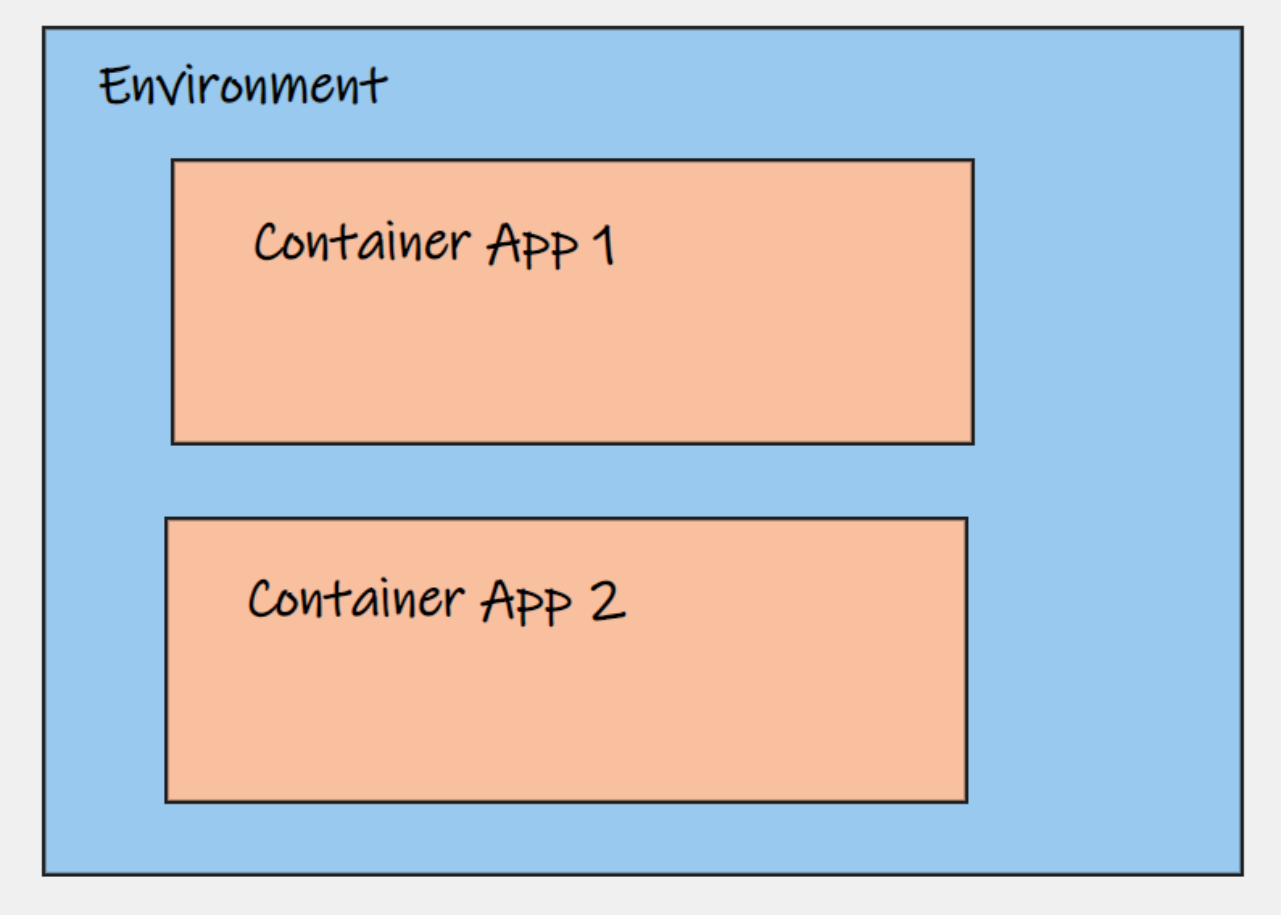
- Consumption based plan – max. 25 replicas in preview
- Linux containers
- Triggers on events (HTTP, timers, queues, events, database…)
- Abstracts Kubernetes environments
- Scaling from zero to …
- Preview – some changes, features added…

Requirements

- Azure Container Registry (or another Docker registry)
- Azure Log Analytics Workspace

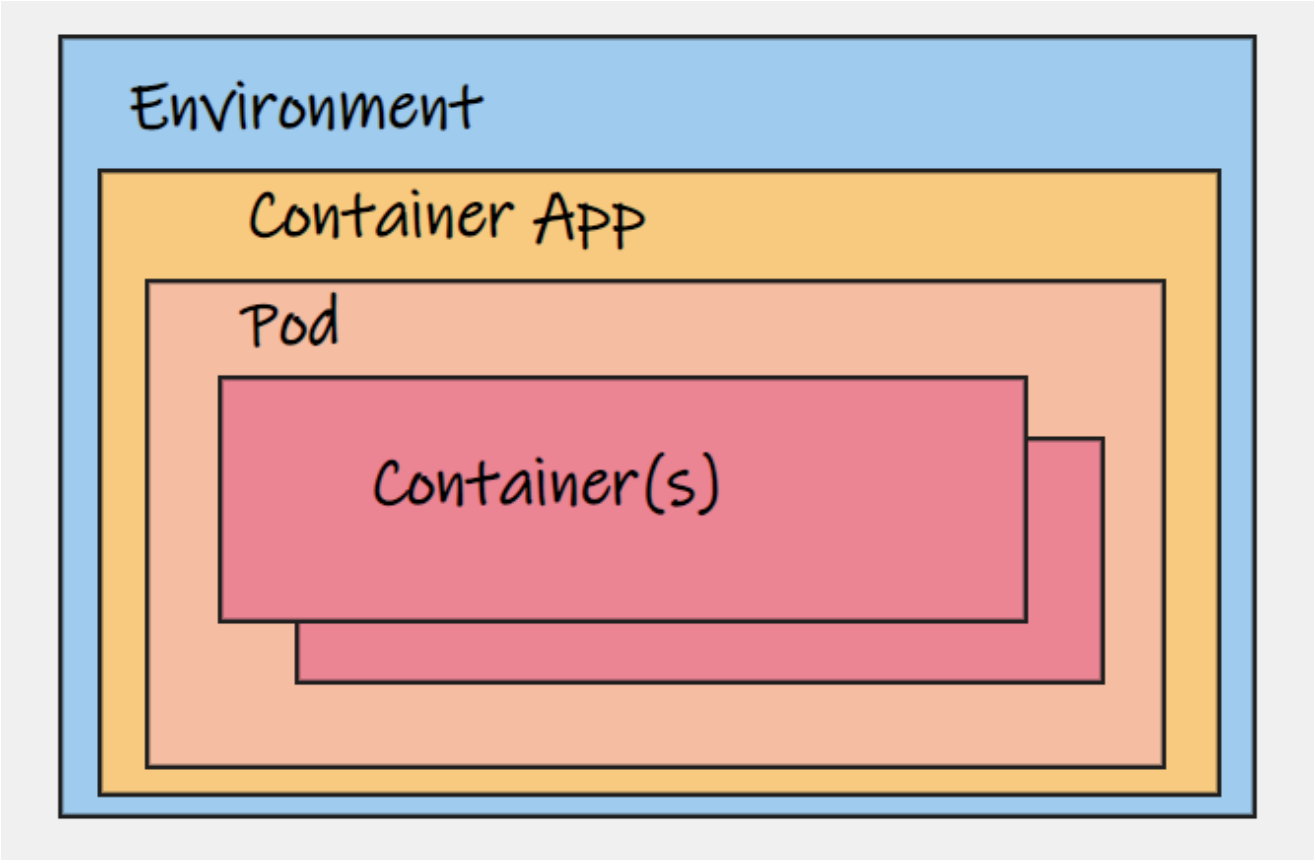
Environment

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



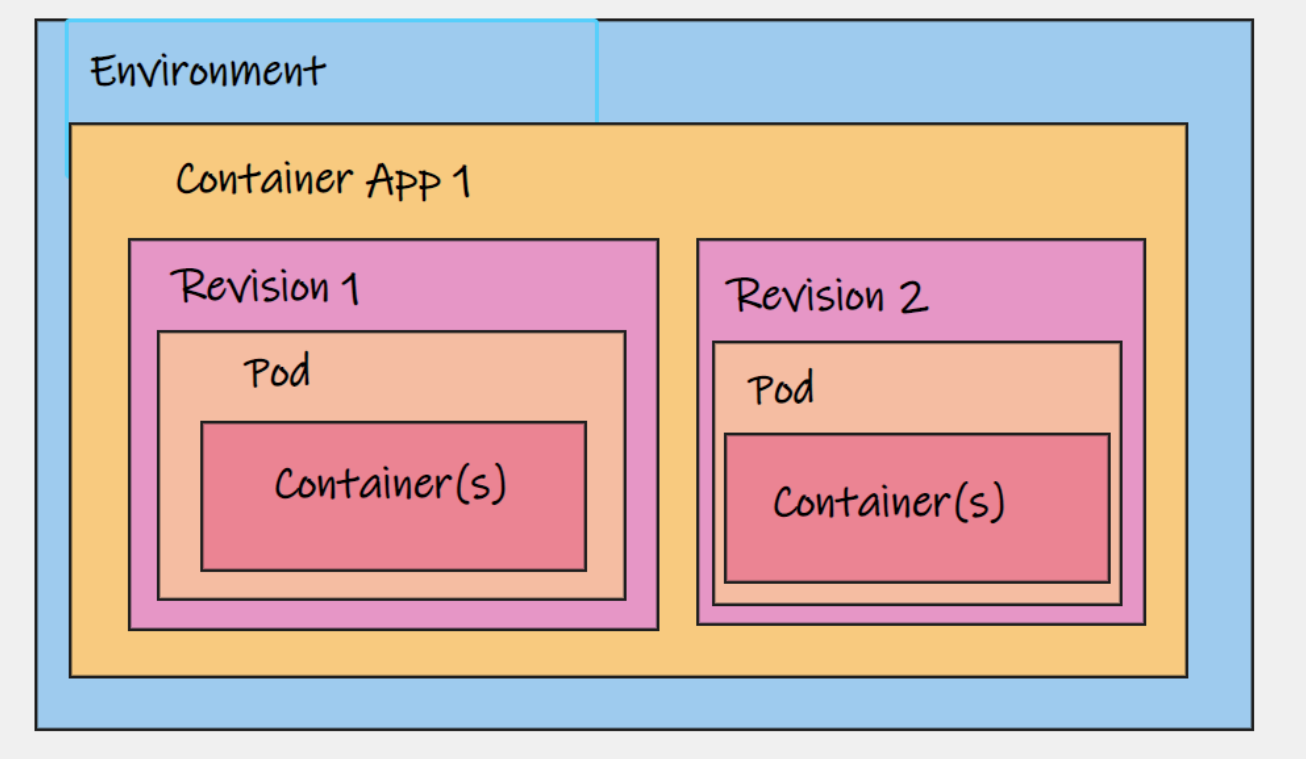
Containers

- 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

Built-in

Supports TLS termination

HTTP/1.1 and HTTP/2

WebSocket and gRPC

Scaling

- KEDA (Kubernetes Event-driven Autoscaler)
- Scaling to zero or dozens of containers
- Triggers
  - CPU
  - Memory
  - HTTP
  - Events
  - ...

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 (Europe)

- Requests
  - €0.505 per million, 2 million free
- Resource
  - VCPU (free: 180.000 VCPU-seconds)
    - € 0.0000307,- 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

Summary

- Azure Kubernetes Service – A managed Kubernetes environment
- Azure Container Apps – A simpler Microservice environment with Kubernetes behind the scenes

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HERZLICHEN DANK!

THANK YOU!

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