Azure Dev Day


# Larry Wall

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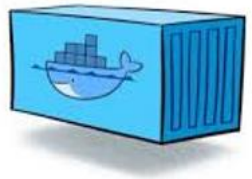
# 4

# Microservice Solutions

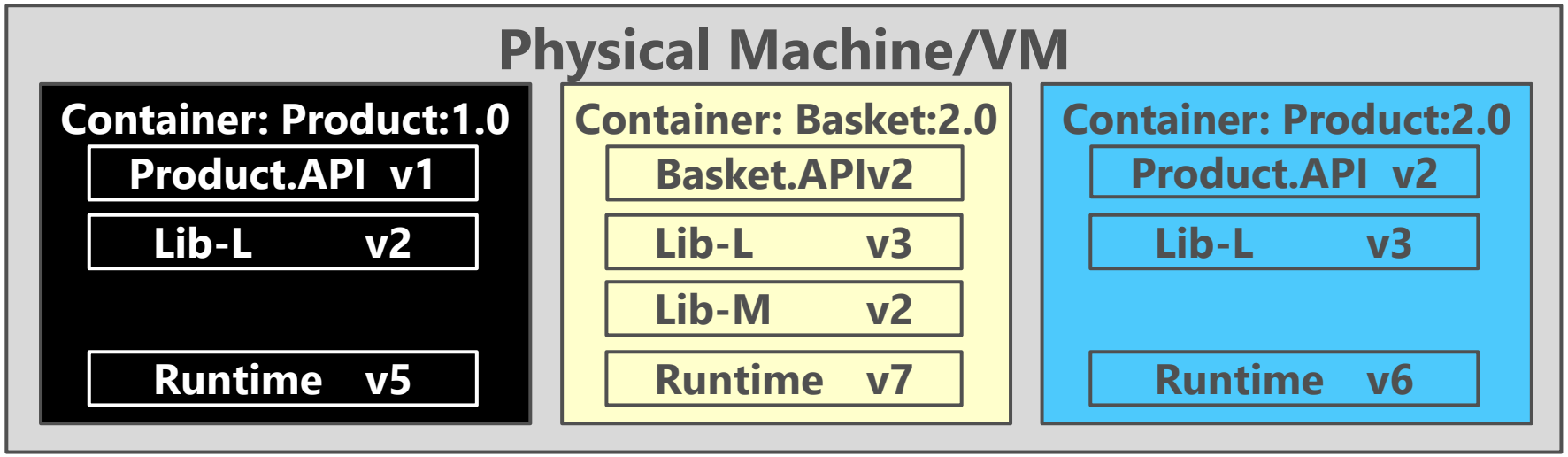
Develop and deploy microservices using Azure Kubernetes Service and Azure Container Registry

# Overview of Containers

# What is a Container?



- Portable unit of deployment
- Application code and dependencies compartmentalized
- Virtualization without the need of a VM overhead
- Best practice to organize one service/container



# What Problems Do Containers Solve?

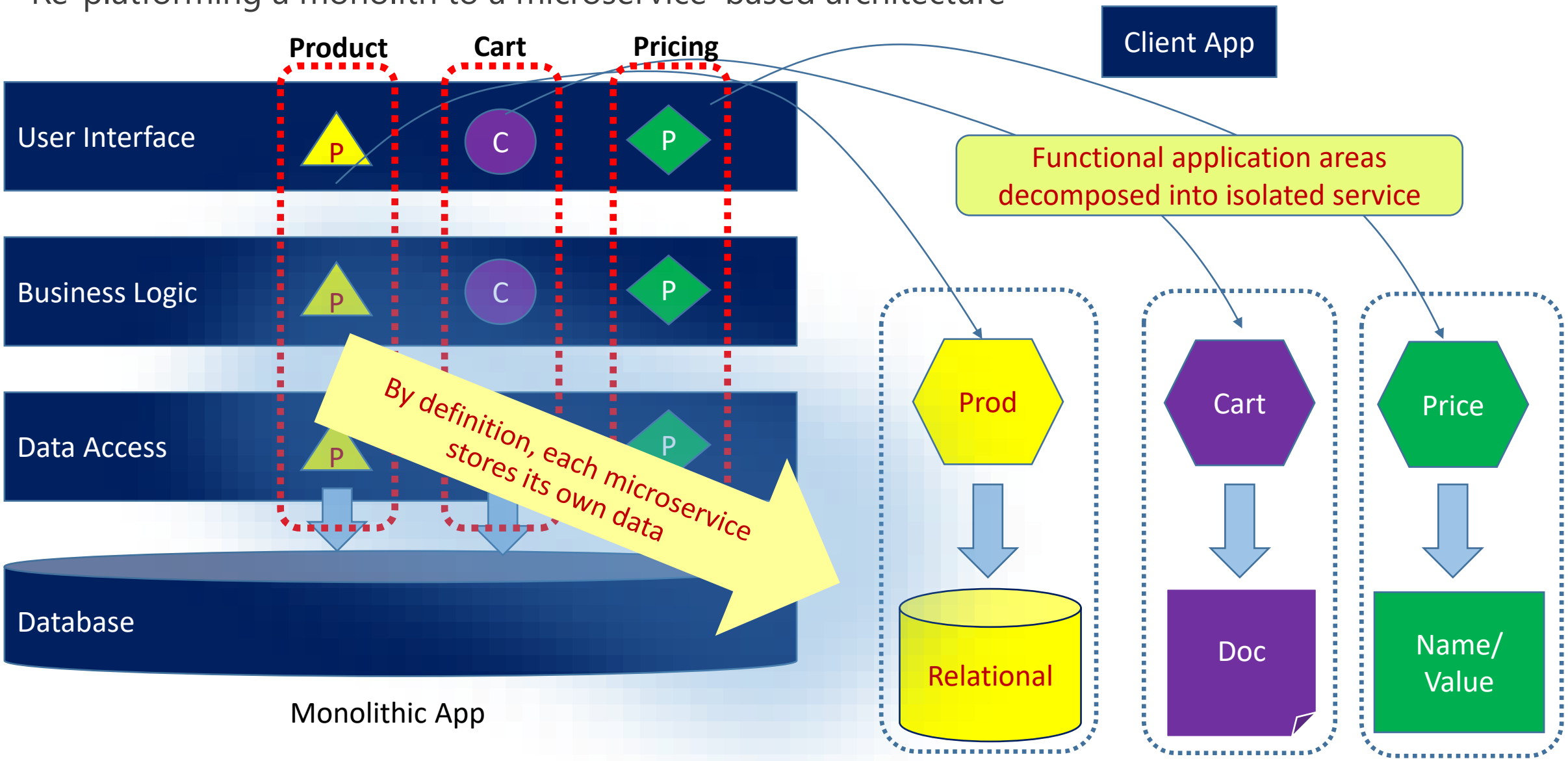
- Guarantees consistency across DEV, TEST and PROD
- Increases Productivity
- Isolation & Performance
- Smaller footprint than VMs

**Containers are a great environment for deploying Microservices**

# Moving to Microservices

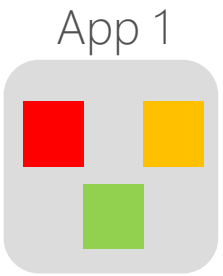
# Moving to Microservices

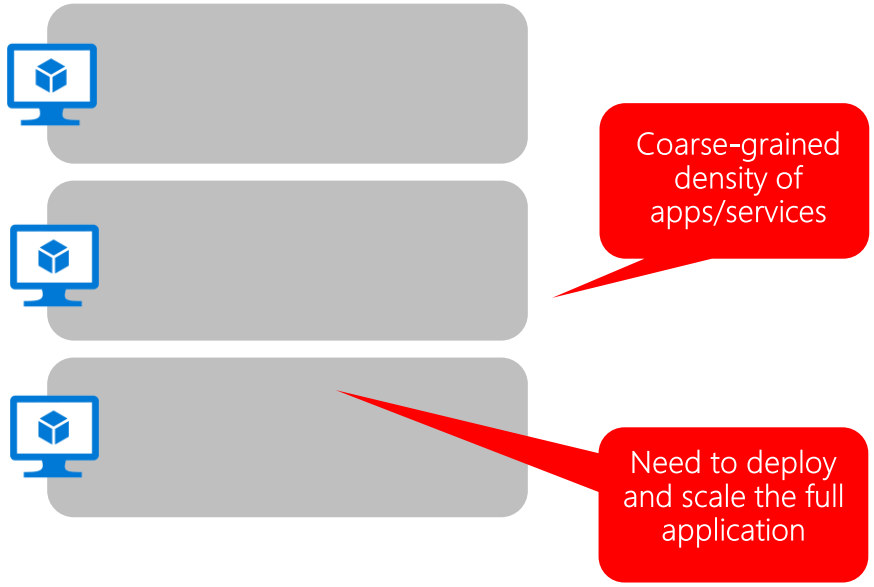
- Re-platforming a monolith to a microservice–based architecture



# Traditional application approach

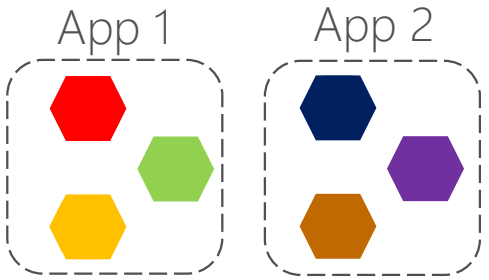
- A traditional application has most of its functionality within a few processes that are componentized with layers and libraries.
- Scales by cloning the app on multiple servers/VMs

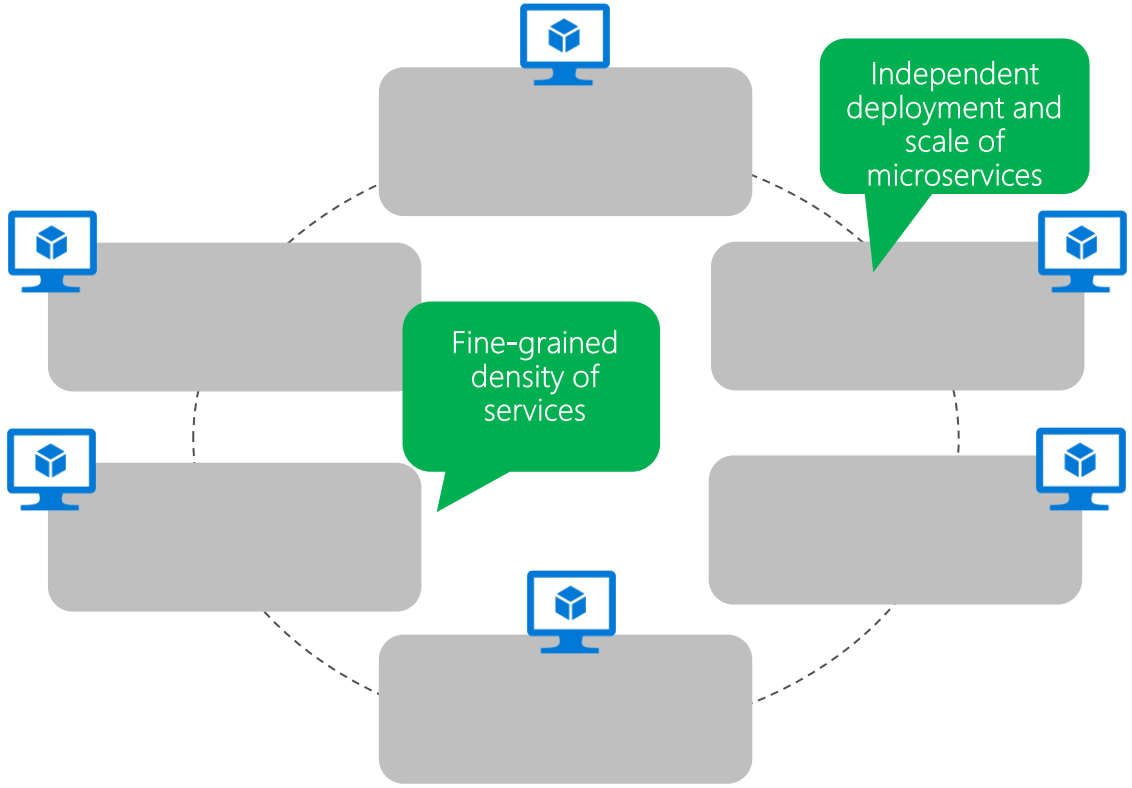



# Microservices application approach

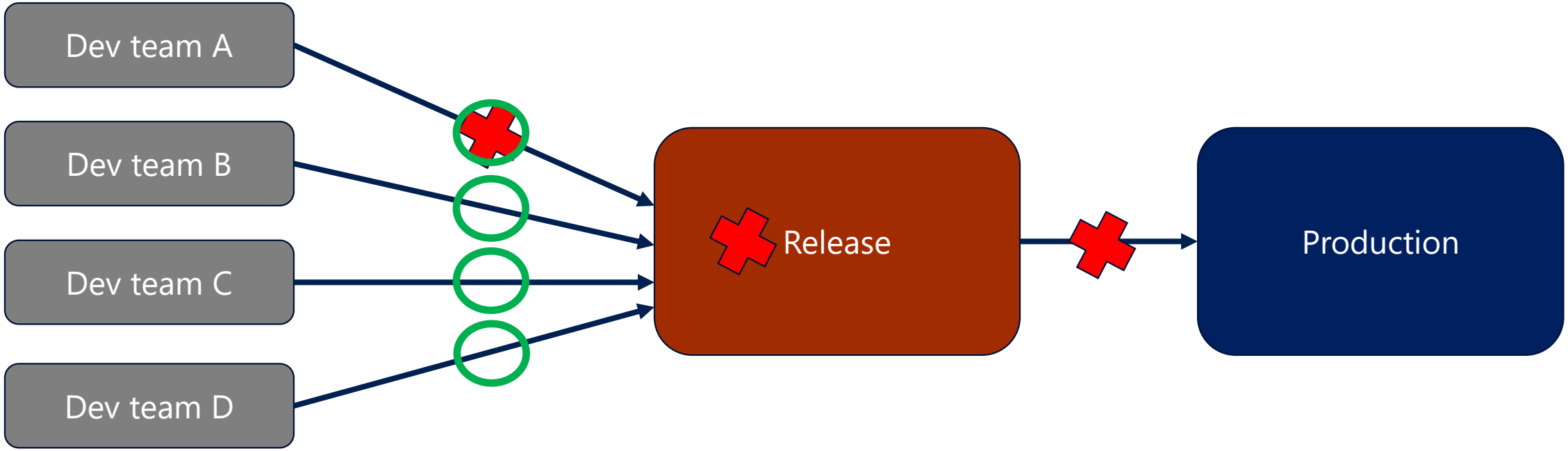
- A microservice application segregates functionality into separate smaller services.
- Scales out by **deploying each service independently** with multiple instances across servers/VMs



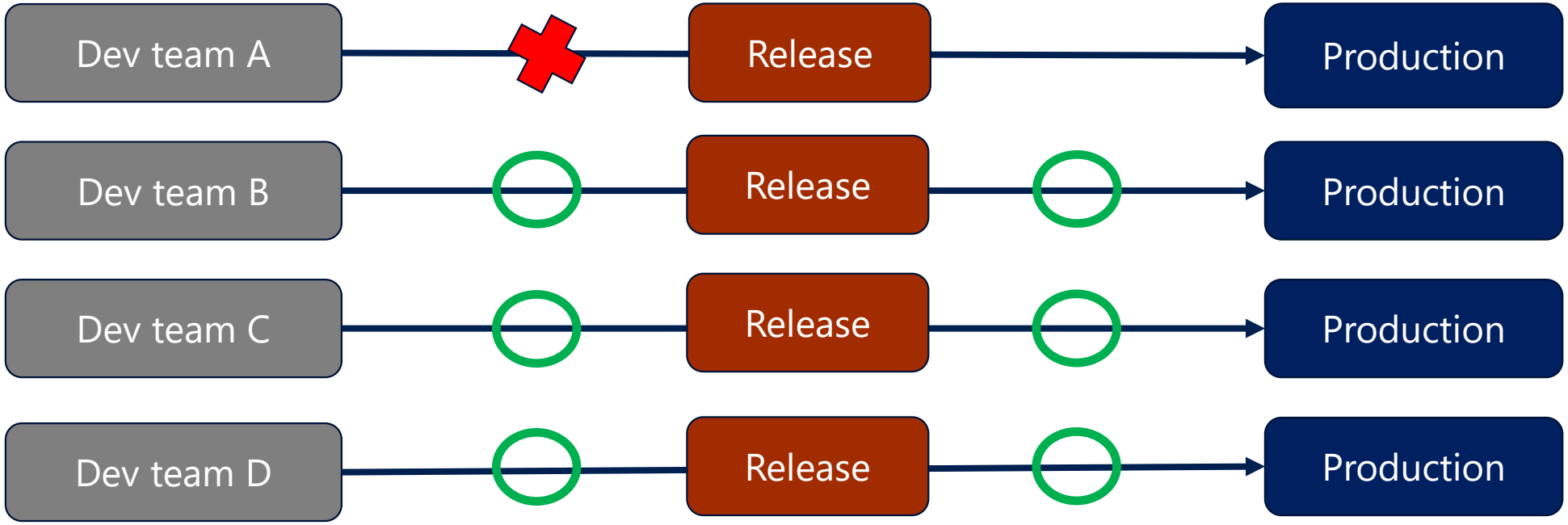
# How Monoliths Diminish Agility

- Single codebase - singe release pipeline
  - All teams *share code base/dependencies* – tightly-coupled
  - All team *share same release cadence*
  - A defect in a dependency can block multiple teams and the release itself



# How Microservices Promote Agility

- Each team owns it own service and codebase…
  - Services are *isolated* and *do not directly share dependencies*
  - Each service has its *own release cadence*
  - Each *deploys independently*



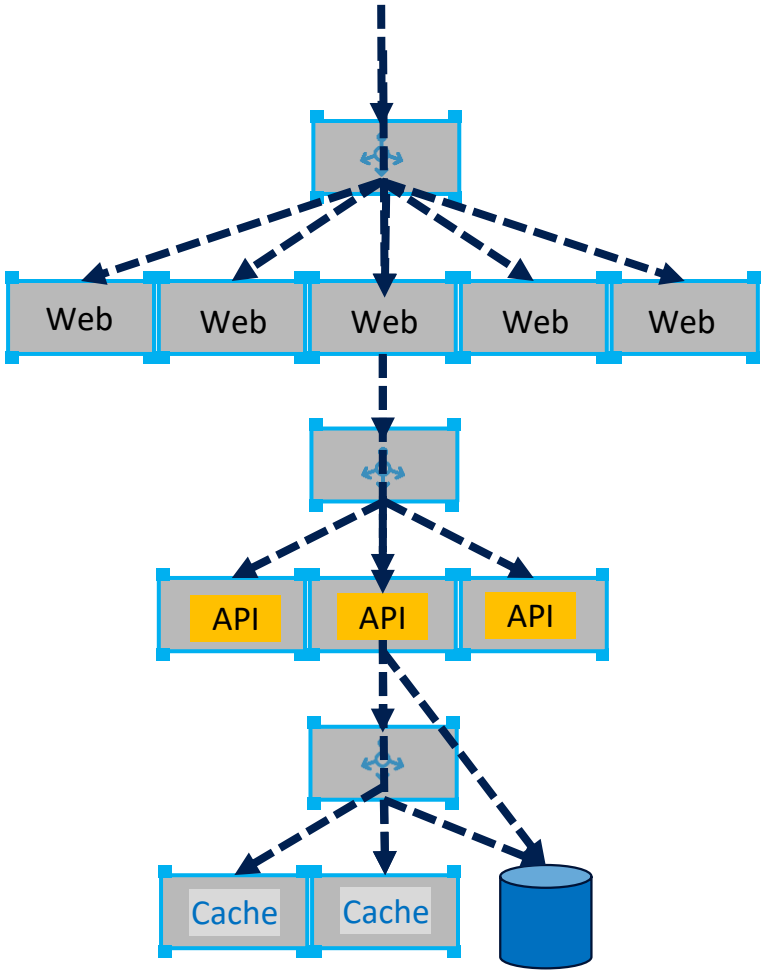
# Kubernetes - Container Orchestrator

# Challenges of a containerized world

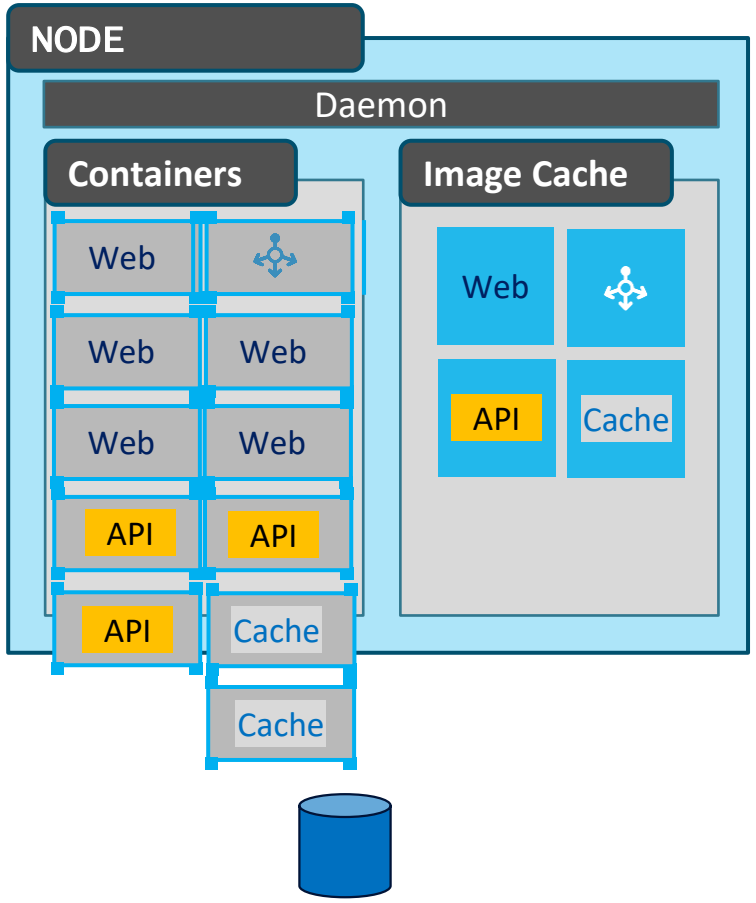
As application development has moved towards a container-based approach, the need to orchestrate and manage the inter-connected resources becomes important

- Load Balancing
- Naming and Discovery
- Logging and Monitoring
- Debugging and Introspection
- Networking

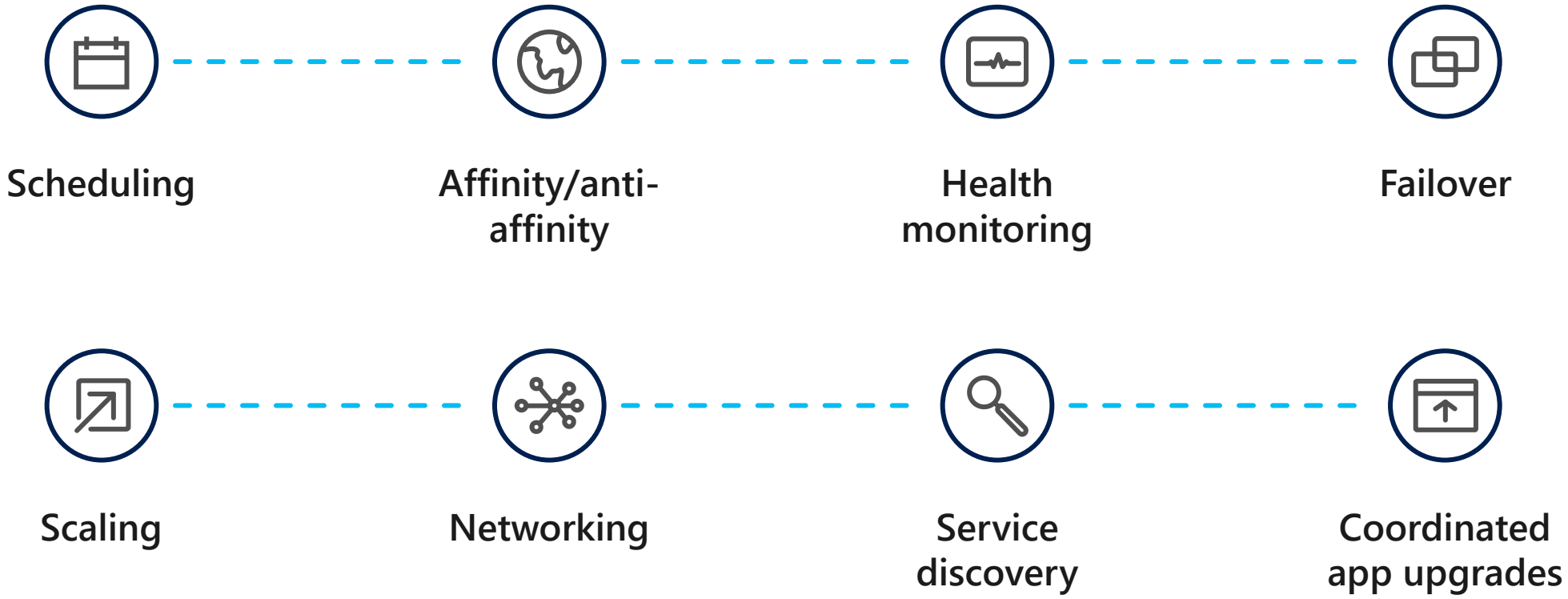
# Application Scale



# Load Balancing & Fault Tolerance



# The elements of orchestration



# Azure Kubernetes Service

# Azure Kubernetes Service (AKS)

Fully-managed Kubernetes platform hosted in Azure as a PaaS service

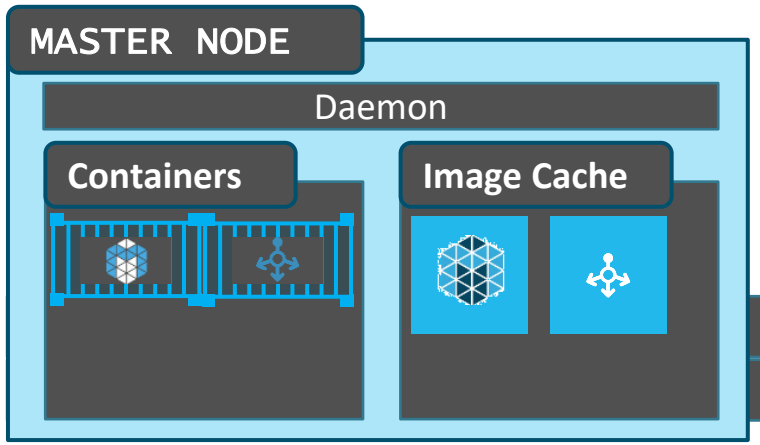
Deeply integrated with Azure dev tools and services

Abstracts the complexity and operational overhead of managing Kubernetes

- AKS implements K8S services, with a custom K8S config file optimized for Azure
- AKS is a K8s managed service w/in Azure

At no charge…

- Automated upgrades, patches
- High reliability, availability
- Automatic scaling
- Self-healing
- Monitoring




# Control Plane

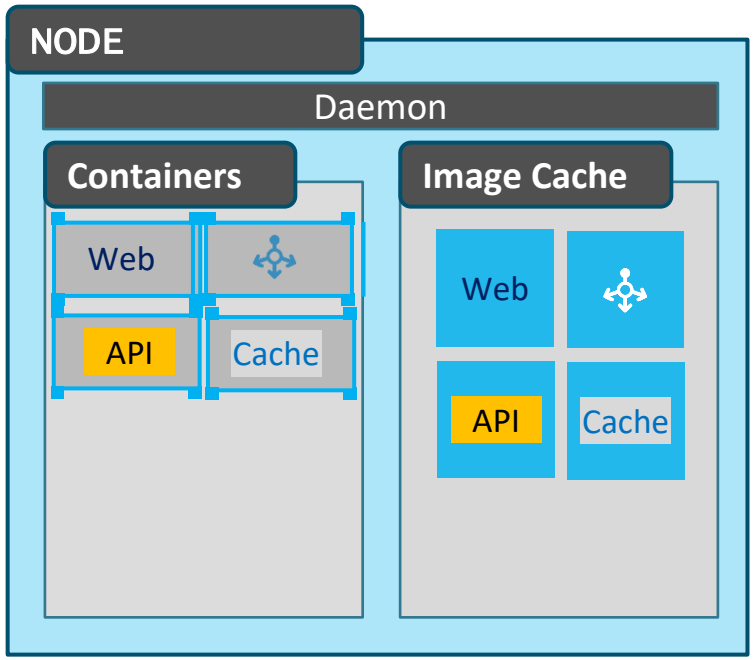
NO CHARGE

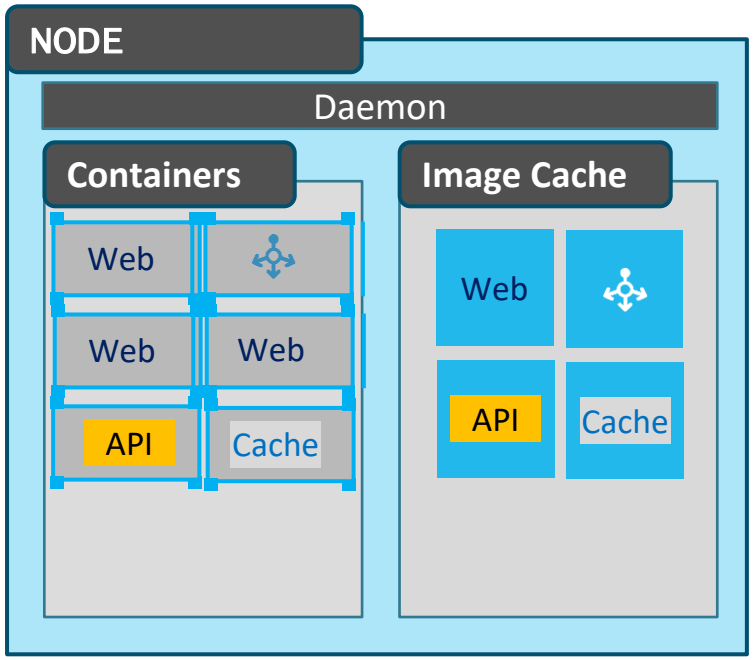
Container Scheduling

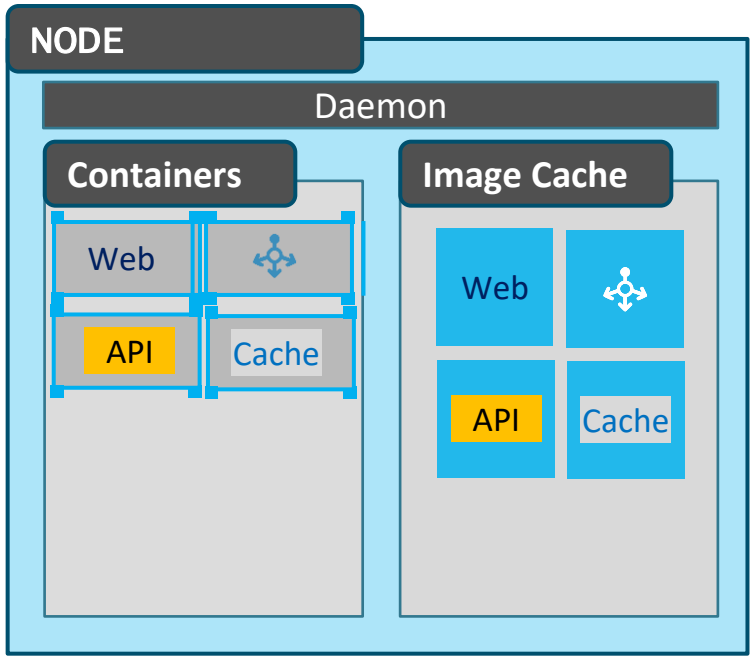
Container Orchestration

At no charge…

- Automated upgrades, patches
- High reliability, availability
- Automatic cluster scaling
- Self-healing
- Monitoring

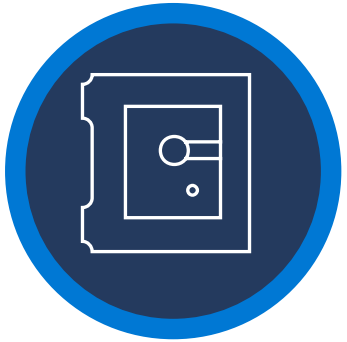


# AKS Features

## High Availability
## High Reliability

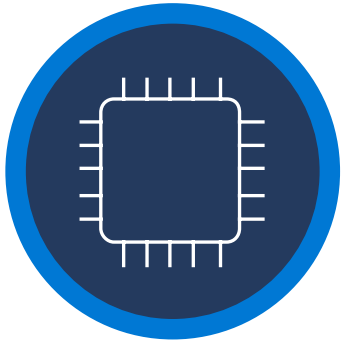


Availability Zones
99.95% SLA
Self-Healing

## Cluster
## Autoscaler

Node Autoscaler
Virtual Nodes

## Security



Azure Key Vault
Azure Active Directory
Private Clusters

## Monitoring

Azure Log analytics
with Container
Insights

# AKS – References

## Documentation, learn, best practices, industry use cases

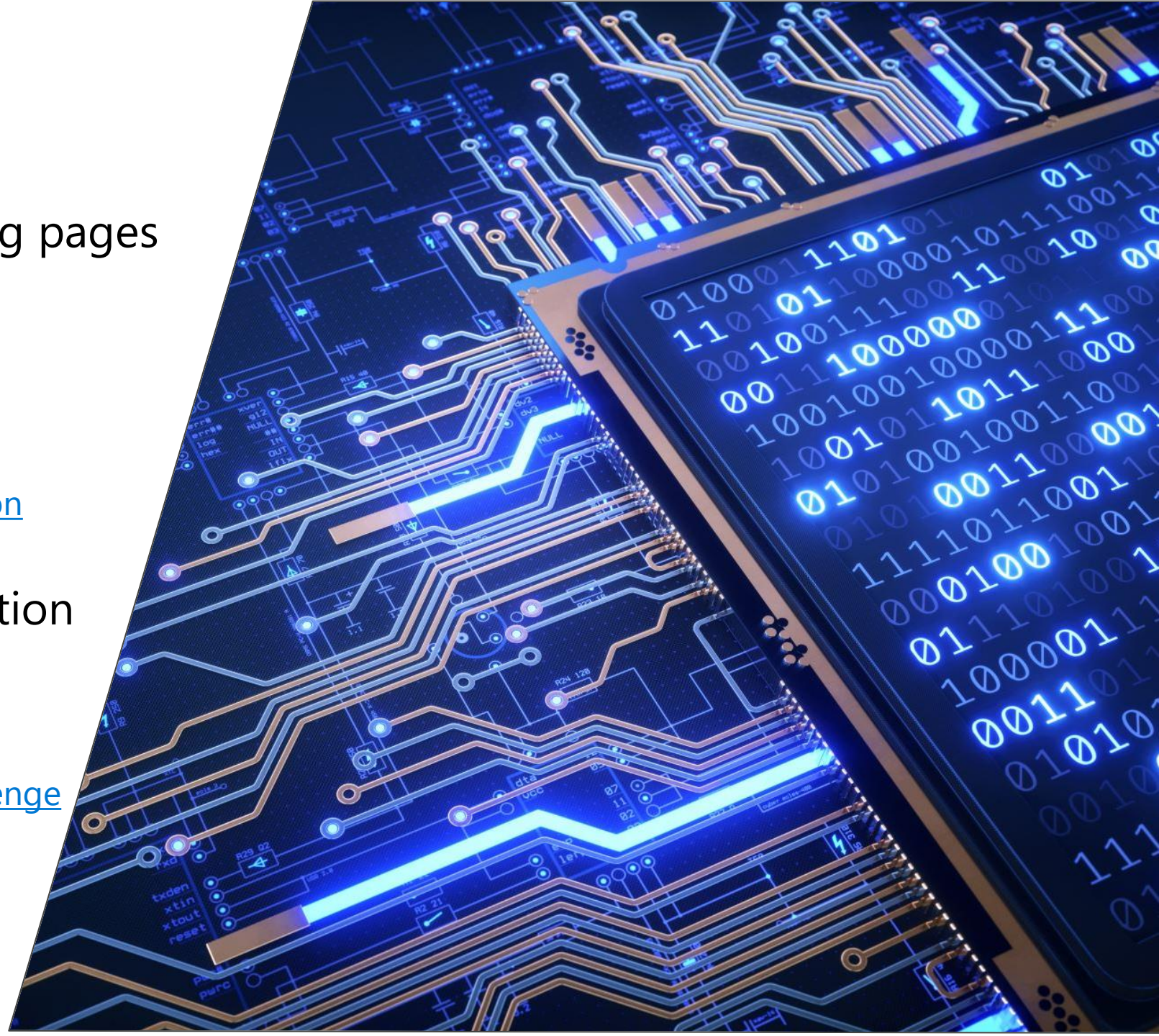
# AKS References

## Azure Kubernetes Service landing pages

- Azure Kubernetes Service portal
- Azure Kubernetes Service pricing
- Azure Kubernetes Service documentation

## Azure Kubernetes Service education

- Azure Kubernetes Service learning path
- Azure Kubernetes Service 50 days challenge
- Azure Developer Cloud Skills Challenge



# AKS Lab

Deploy containers to AKS


https://aka.ms/azuredevdaylabs

Azure Dev Day

# Thank you!

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