



Tag 4

AZ-104

Administer PaaS Compute Options

Guten Morgen!

AZ-104 Agenda

- 01: Administer Identity
- 02: Administer Governance and Compliance
- 03: Administer Azure Resources
- 04: Administer Virtual Networking
- 05: Administer Intersite Connectivity
- 06: Administer Network Traffic Management
- 07: Administer Azure Storage
- 08: Administer Azure Virtual Machines
- 09: Administer PaaS Compute Options ←
- 10: Administer Data Protection
- 11: Administer Monitoring

Tim Berners-Lee



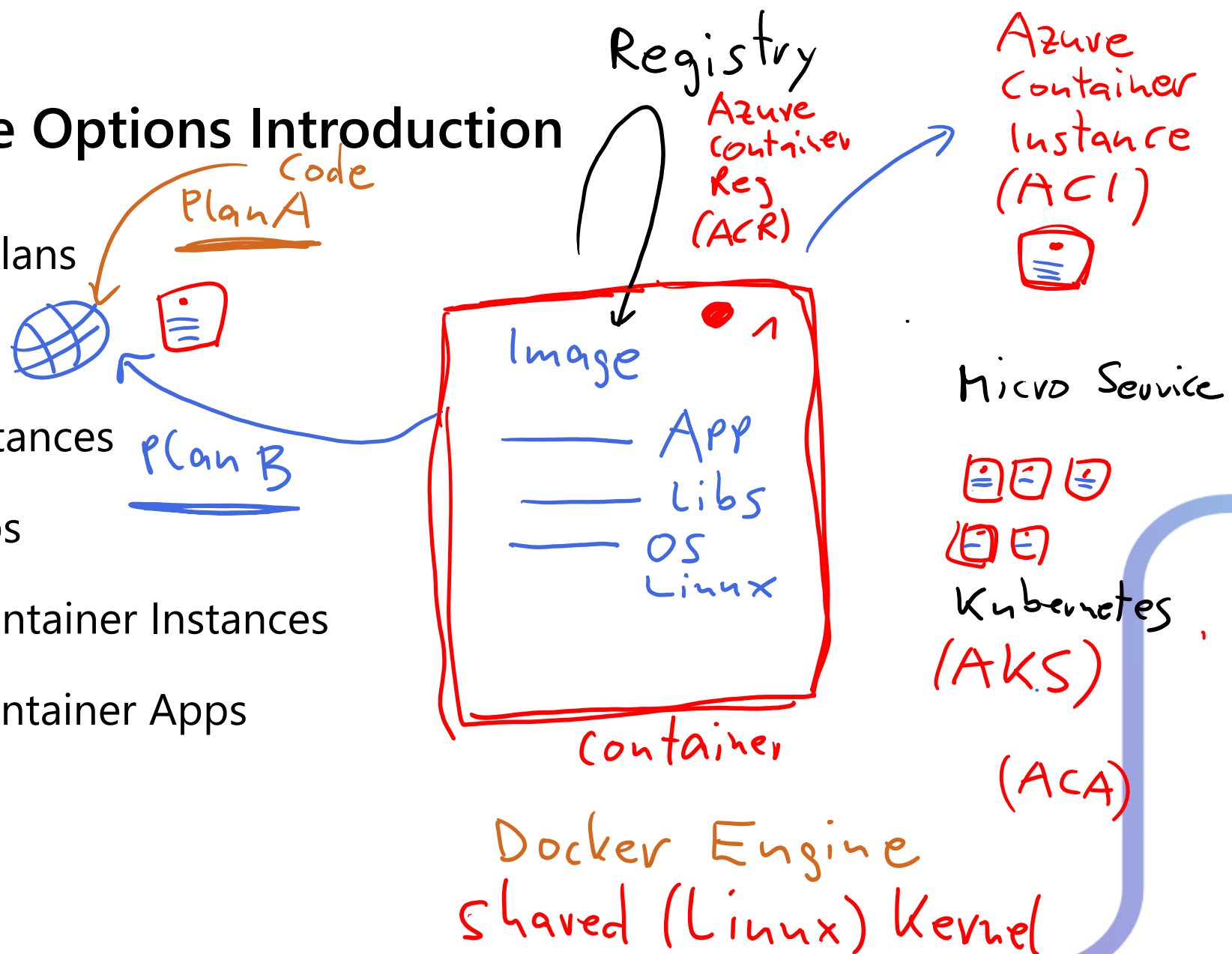
Kubernetes
K8s

Kusto
KQL

LA
= Data Lake

Administer PaaS Compute Options Introduction

- Configure Azure App Service Plans
- Configure Azure App Services
- Configure Azure Container Instances
- Lab 09a - Implement Web Apps
- Lab 09b - Implement Azure Container Instances
- Lab 09c – Implement Azure Container Apps



Configure Azure App Service Plans



Learning Objectives - Configure Azure App Service Plans

- Implement Azure App Service Plans
- Determine App Service Plan Pricing
- Scale Up and Scale Out the App Service Plan
- Configure App Service Plan Scaling
- Demonstration – Configure Azure App Service Plans
- Learning Recap

Deploy and manage Azure compute resources (20-25%): Create and configure Azure App Service

- Provision an App Service plan
- Configure scaling for an App Service plan

Implement Azure App Service Plans

- Determines performance, price, and features
- Defines a set of compute resources for a web app to run
 - Region where compute resources will be created
 - Number of virtual machine instances
 - Size of virtual machine instances
 - Pricing tier (next slide)
- One or more apps can be configured to run in the same App Service plan



Determine App Service Plan Pricing *Legacy*

Selected Features	Free	Shared (dev/test)	Basic (dedicated dev/test)	Standard (production workloads)	Premium (enhanced scale and performance)	Isolated (high-performance, security and isolation)
Web, mobile, or API apps	10	100	Unlimited	Unlimited	Unlimited	Unlimited
Disk space	1 GB	1 GB	10 GB	50 GB	250 GB	1 TB
Auto Scale	–	–	–	Supported	Supported	Supported
Deployment Slots	0	0	0	5	20	20
Max Instances	–	–	Up to 3	Up to 10	Up to 30	Up to 100

Shared compute
(Free and Shared). Run apps on the same Azure VM as other App Service apps, and the resources cannot scale out

Dedicated compute
(Basic, Standard, Premium). Run apps in the same plan in dedicated Azure VMs

Isolated. Runs apps on dedicated Azure VMs in dedicated Azure virtual networks

Scale Up and Scale Out the App Service Plan

The screenshot shows the Azure App Service Scale settings. On the left is a sidebar with navigation options: 'Diagnose and solve problems', 'Settings', 'Apps', 'File system storage', 'Networking', 'Scale up (App Service plan)', 'Scale out (App Service plan)' (which is highlighted), 'Resource explorer', and 'Properties'. The main area is titled 'Choose how to scale your resource' and contains two options: 'Manual scale' (selected with a blue radio button) and 'Custom autoscale' (unselected). Below these, the 'Manual scale' section is expanded, showing an 'Override condition' field and an 'Instance count' slider. The slider is currently set to 3, with a numeric input box to its right.

Diagnose and solve problems

Settings

- Apps
- File system storage
- Networking
- Scale up (App Service plan)
- Scale out (App Service plan)**
- Resource explorer
- Properties

Choose how to scale your resource

Manual scale ☒ Maintain a fixed instance count

Custom autoscale ☐ Scale on any schedule, based on any metrics

Manual scale

Override condition

Instance count 3

Scale up (change the App Service plan):

- More hardware (CPU, memory, disk)
- More features (dedicated virtual machines, staging slots, autoscaling)

Scale out (increase the number of VM instances):

- Manual (fixed number of instances)
- Auto scale (based on predefined rules and schedules)

Configure App Service Plan Scaling

The screenshot shows the 'Settings' tab for an App Service Plan, specifically the 'Scale out (App Service plan)' section. The main heading is 'Choose how to scale your resource'. There are two options: 'Manual scale' (Maintain a fixed instance count) and 'Custom autoscale' (Scale on any schedule, based on any metrics). The 'Custom autoscale' option is selected and highlighted with a blue border. Below this, a 'Profile 1' section is shown, which is also highlighted with a red border. Inside the 'Profile 1' section, the 'Scale mode' is set to 'Scale to a specific instance count' (selected with a blue radio button). The 'Instance count' is set to '2'. The 'Schedule' is set to 'Specify start/end dates' (selected with a blue radio button). The 'Timezone' is set to '(UTC-08:00) Pacific Time (US & Canada)'. The 'Start date' is '12/18/2022' at '12:00:00 AM'. The 'End date' is '12/18/2022' at '11:59:00 PM'.

Settings

Scale out (App Service plan)

Choose how to scale your resource

Manual scale ☐
Maintain a fixed instance count

Custom autoscale ☒
Scale on any schedule, based on any metrics

Profile 1

Scale mode ☐ Scale based on a metric ☒ Scale to a specific instance count

Instance count*

Schedule ☒ Specify start/end dates ☐ Repeat specific days

Timezone

Start date

End date

Adjust available resources based on the current demand

Improves availability and fault tolerance

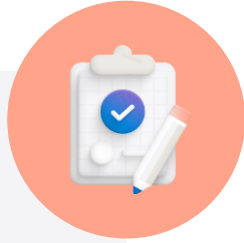
Scale based on a metric (CPU percentage, memory percentage, HTTP requests)

Scale according to a schedule (weekdays, weekends, times, holidays)

Can implement multiple rules – combine metrics and schedules

Don't forget to scale in

Learning Recap – Configure Azure App Service Plans



Check your
knowledge
questions and
additional
study

Reference modules

- [Configure Azure App Service plans](#)
- [Scale an App Service web app to efficiently meet demand with App Service scale up and scale out](#)

Configure Azure App Services



Learning Objectives - Configure Azure App Services

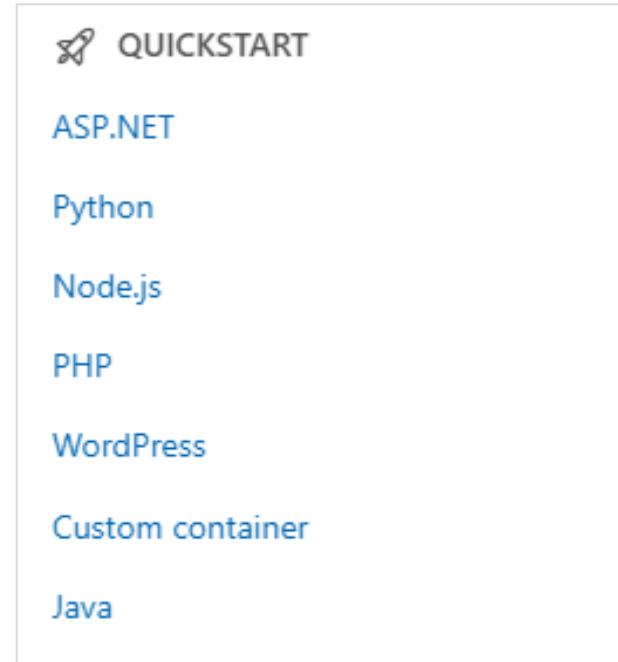
- Implement Azure App Service
- Create an App Service
- Create Deployment Slots
- Add Deployment Slots
- Secure an App Service
- Create Custom Domain Names
- Backup an App Service
- Demonstration – Azure App Services
- Learning Recap

Implement and manage Azure compute resources (20-25%): Create and configure Azure App Service

- Create an App Service
- Configure certificates and TLS
- Map an existing custom DNS name
- Configure backup
- Configure networking settings
- Configure deployment slots

Implement Azure App Service

- Includes Web Apps, API Apps, Mobile Apps, and Function Apps
- Fully managed environment enabling high productivity development
- Platform-as-a-service (PaaS) offering for building and deploying highly available cloud apps for web and mobile
- Platform handles infrastructure so developers focus on core web apps and services
- Developer productivity using .NET, .NET Core, Java, Python and a host of others
- Provides enterprise-grade security and compliance



Create an App Service

Name must be unique

Access using *azurewebsites.net* – can map to a custom domain

Publish Code (Runtime Stack)

Publish Docker Container

Linux or Windows

Region closest to your users

App Service Plan

Instance Details

Name * .azurewebsites.net

Publish * ☒ Code ☐ Docker Container ☐ Static Web App

Runtime stack * ▼

Operating System ☒ Linux ☐ Windows

Region * ▼
📘 Not finding your App Service Plan? Try a different region or select your App Service Environment.

Pricing plans

Linux Plan (East US) * ⓘ ▼
[Create new](#)

Pricing plan ▼
[Explore pricing plans](#)

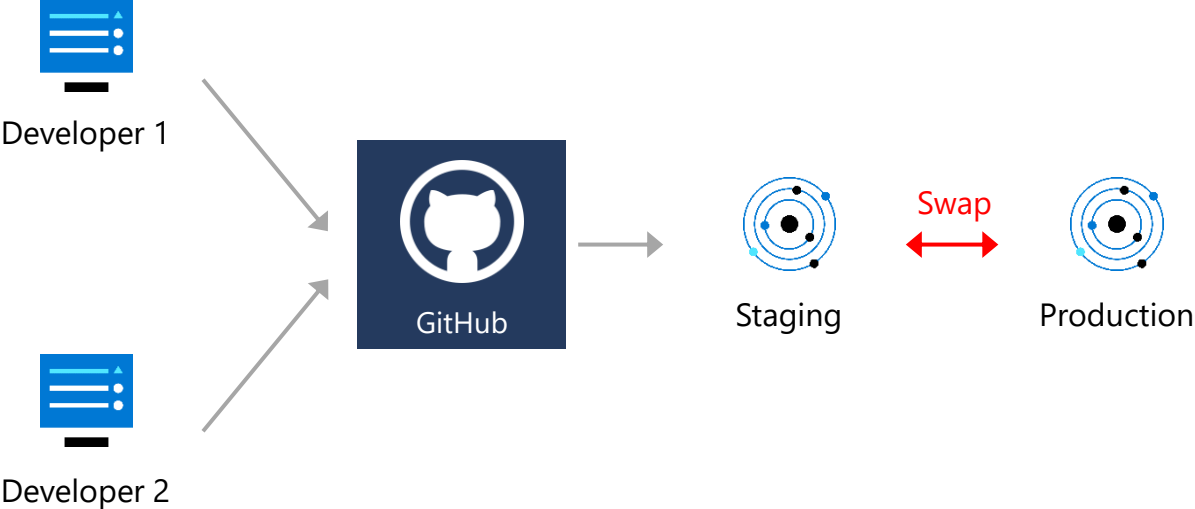
Zone redundancy

Zone redundancy ☐ **Enabled:** Your App Service plan and the apps in it will be zone redundant. The minimum App Service plan instance count will be three.

☒ **Disabled:** Your App Service Plan and the apps in it will not be zone redundant. The minimum App Service plan instance count will be one.

Create Deployment Slots

Continuous Deployment with Stage Slot



Service Plan	Slots
Free, Shared, Basic	0
Standard	Up to 5
Premium	Up to 20
Isolated	Up to 20

- Deploy to a different deployment slots (depends on service plan)
- Validate changes before sending to production
- Deployment slots are live apps with their own hostnames
- Avoids a cold start – eliminates downtime
- Fallback to a last known good site
- Auto Swap when pre-swap validation is not needed

Add Deployment Slots

Select whether to clone an app configuration from another deployment slot

When you clone, pay attention to the settings:

- Slot-specific app settings and connection strings
- Continuous deployment settings
- App Service authentication settings

Not all settings are sticky (endpoints, custom domain names, SSL certificates, scaling)

Review and edit your settings before swapping

Add a slot

×

Name

preproduction

Clone settings from:

Do not clone settings

Do not clone settings

appservice09

Secure an App Service

Authentication:

- Enable authentication – default anonymous
- Log in with a third-party identity provider

Security:

- Troubleshoot with Diagnostic Logs – failed requests, app logging
- Add an SSL certificate – HTTPS
- Define a priority ordered allow/deny list to control network access to the app
- Store secrets in the Azure Key Vault

Add an identity provider ...

Basics Permissions

Choose an identity provider from the dropdown below to start.

Identity provider *

Select identity provider

 Microsoft

Sign in Microsoft and Microsoft Entra identities and call Microsoft APIs

 Apple


Sign in Apple users and call Apple APIs

 Facebook

Sign in Facebook users and call Facebook APIs

 GitHub

Sign in GitHub users and call GitHub APIs

 Google

Sign in Google users and call Google APIs

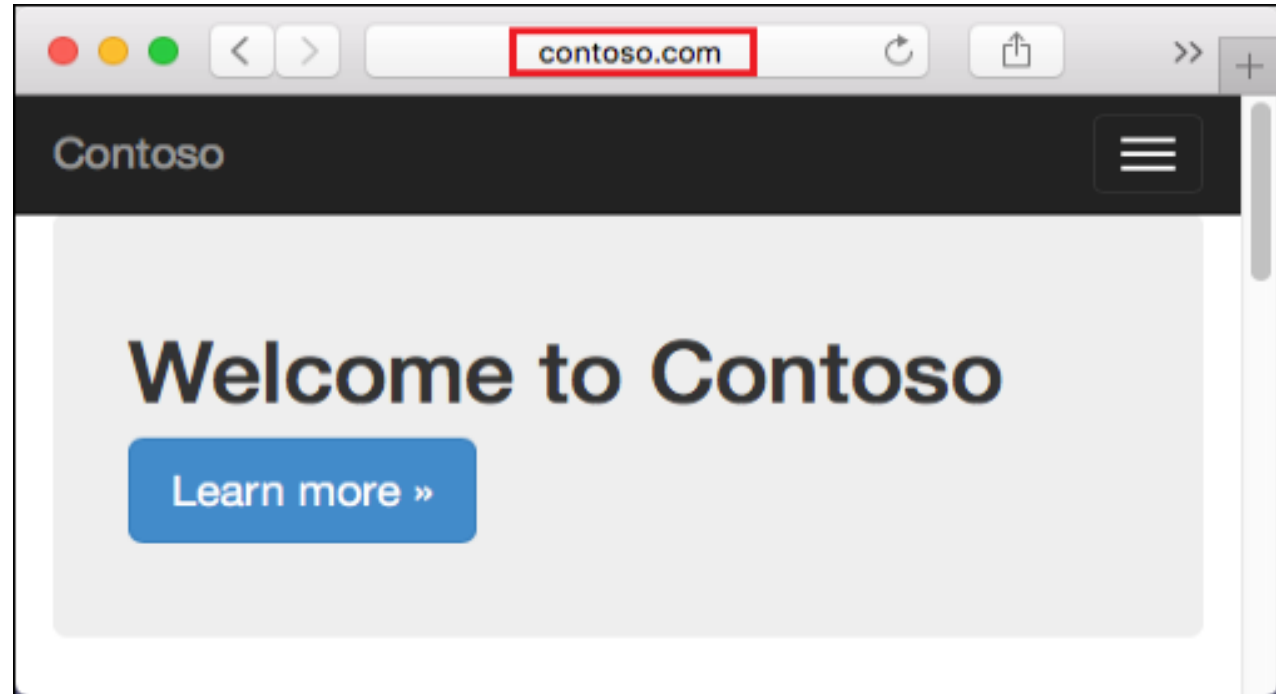
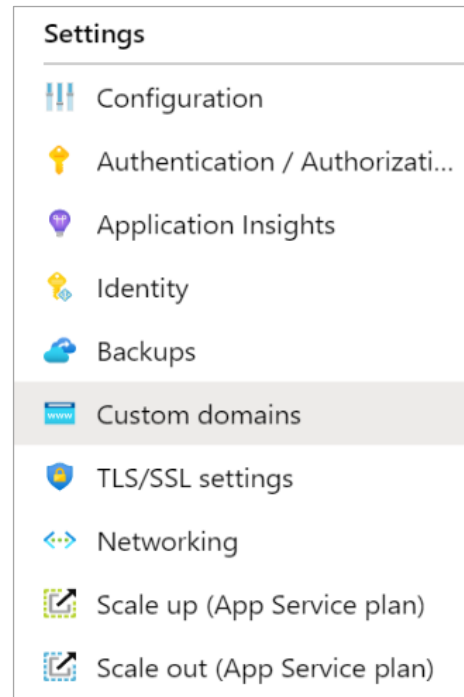
 Twitter

Sign in Twitter users and call Twitter APIs

OpenID Connect

Sign in users with OpenID Connect

Create Custom Domain Names



Redirect the default web app URL

Validate the custom domain in Azure

Use the DNS registry for your domain provider – create a CNAME or A record with the mapping

Ensure App Service plan supports custom domains

Backup an App Service

Create app backups manually or on a schedule

Backup the configuration, file content, and database connected to the app

Requires Standard or Premium plan

Backups can be up to 10 GB of app and database content

Configure partial backups and exclude items from the backup

Restore your app on-demand to a previous state, or create a new app

Settings



Configuration



Authentication / Authorizati...



Application Insights



Identity



Backups



Custom domains



TLS/SSL settings



Networking

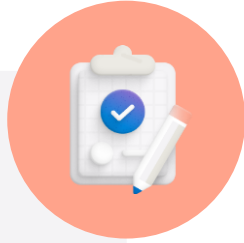


Scale up (App Service plan)



Scale out (App Service plan)

Learning Recap – Configure Azure App Services



Check your
knowledge
questions and
additional
study

Reference modules

- [Host a web application with Azure App Service](#)
- [Scale apps in Azure App Service](#)
- [Explore Azure App Service deployment slots](#)
- [Stage a web app deployment for testing and rollback by using App Service deployment slots](#)

Configure Azure Container Instances Apps



Learning Objectives - Configure Azure Container Instances

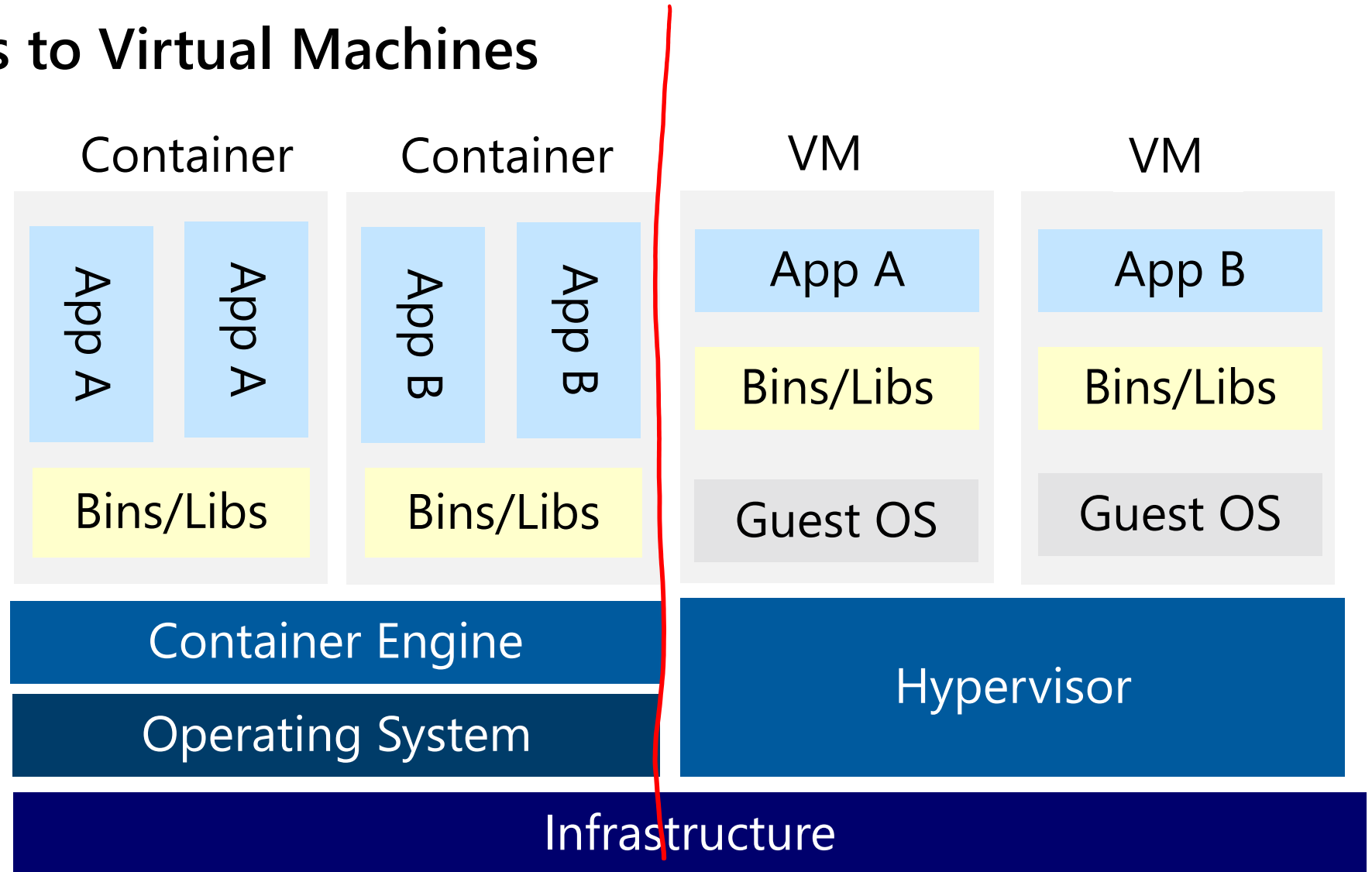
- Compare Containers to Virtual Machines
- Understand Container Images
- Review Azure Container Instances
- Implement Container Groups
- Demonstration – Configure Azure Container Instances
- Manage Containers with Azure Container Apps
- Compare container management solutions
- Demonstration – Configure Azure Container Apps
- Learning Recap

Implement and manage Azure compute resources (20-25%): Provision and manage containers in Azure portal

- Create and manage an Azure container registry
- Provision a container by using Azure Container Instances (ACI)
- Provision a container by using Azure Container Apps (ACA)
- Manage sizing and scaling for containers, including ACI and ACA

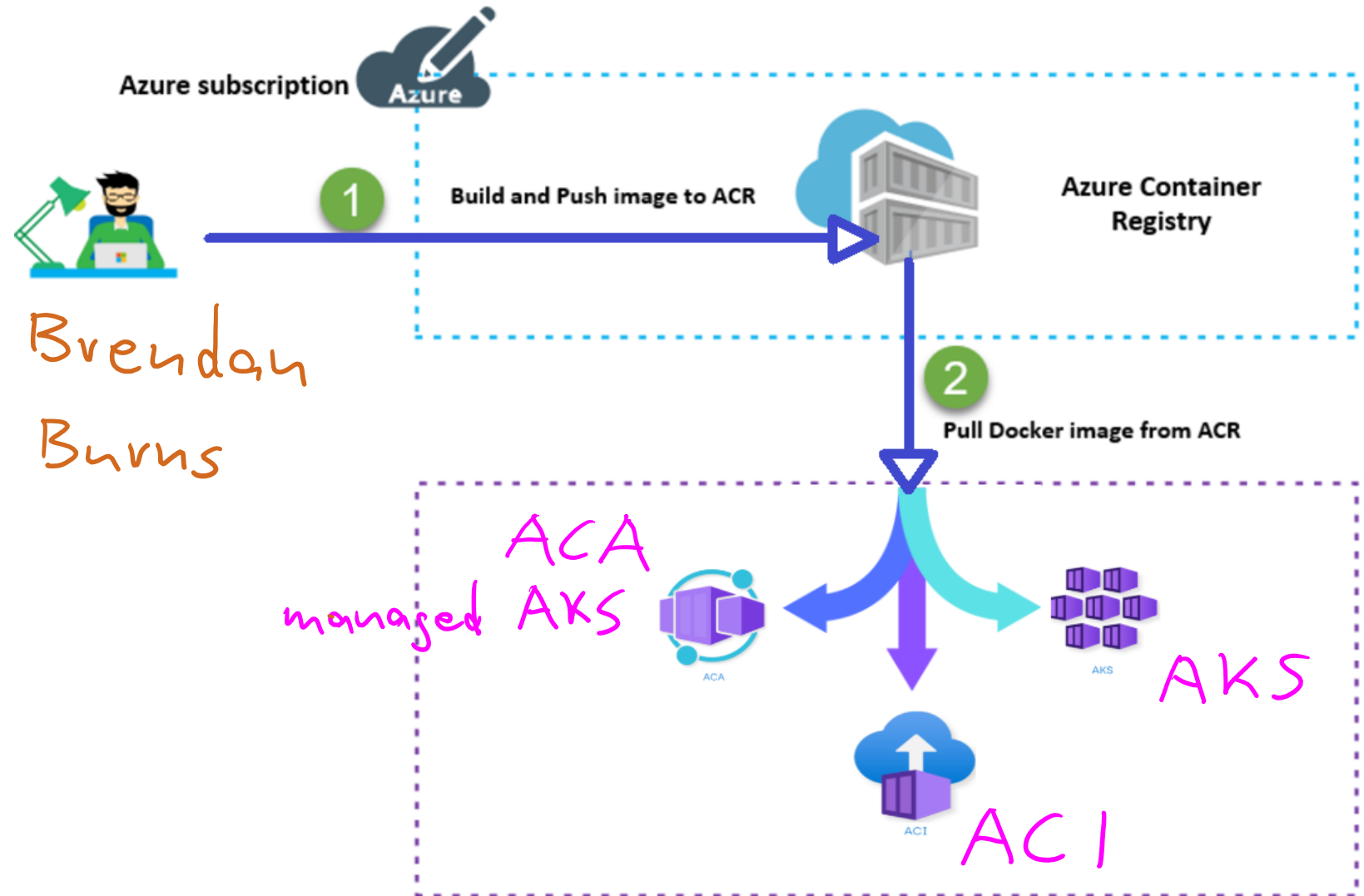
Compare Containers to Virtual Machines

- Isolation
- Operating System
- Deployment
- Persistent storage
- Fault tolerance



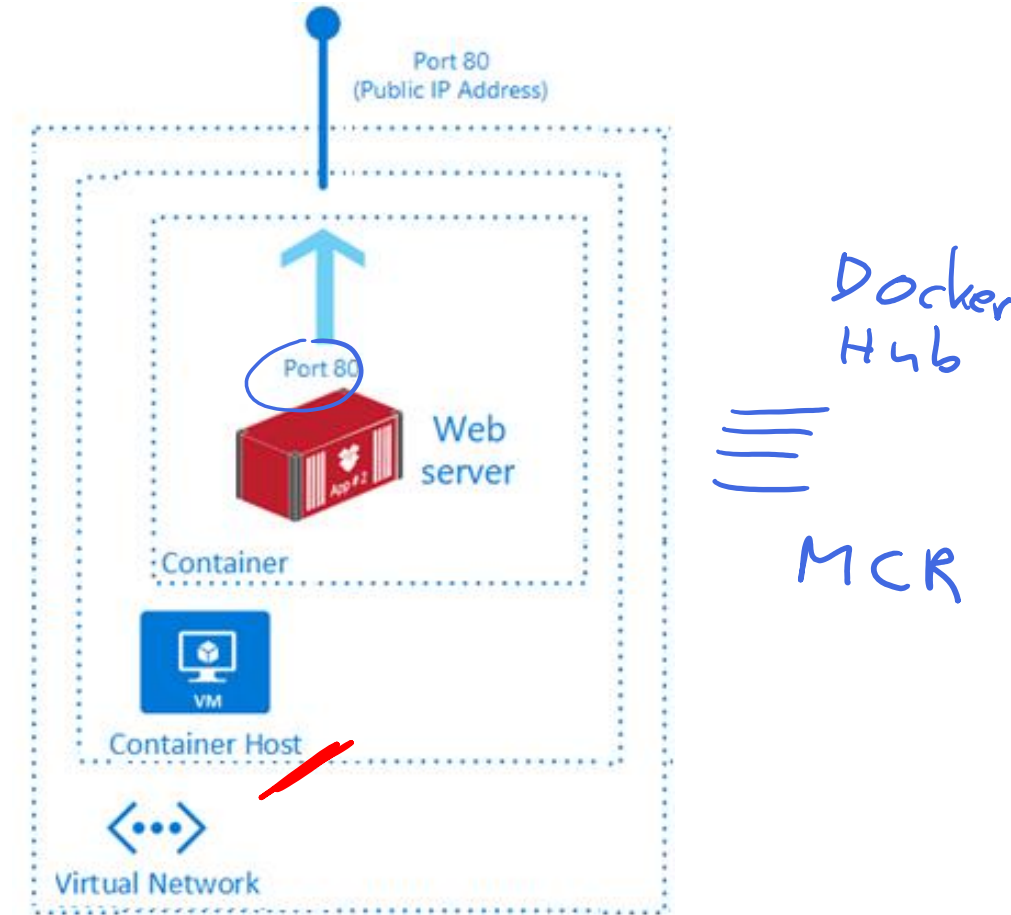
Understand Container Images

A container image is a lightweight, standalone, executable package of software that encapsulates everything needed to run an application.



Review Azure Container Instances

- PaaS Service
- Fast startup times
- Public IP connectivity and DNS name
- Isolation features
- Custom sizes
- Persistent storage
- Linux and Windows Containers
- Co-scheduled Groups
- Virtual network Deployment

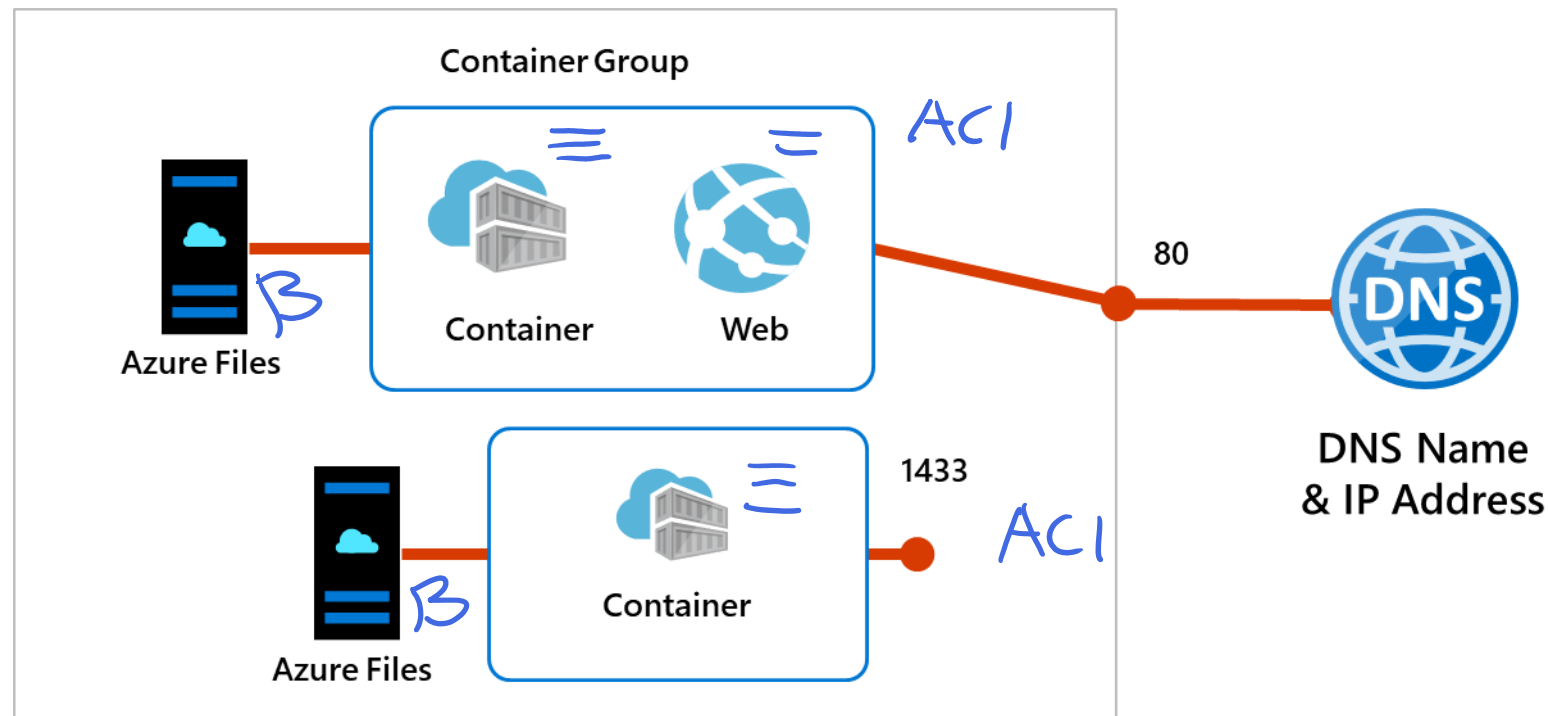


Fastest way to run a container in Azure without provisioning a VM

Implement Container Groups

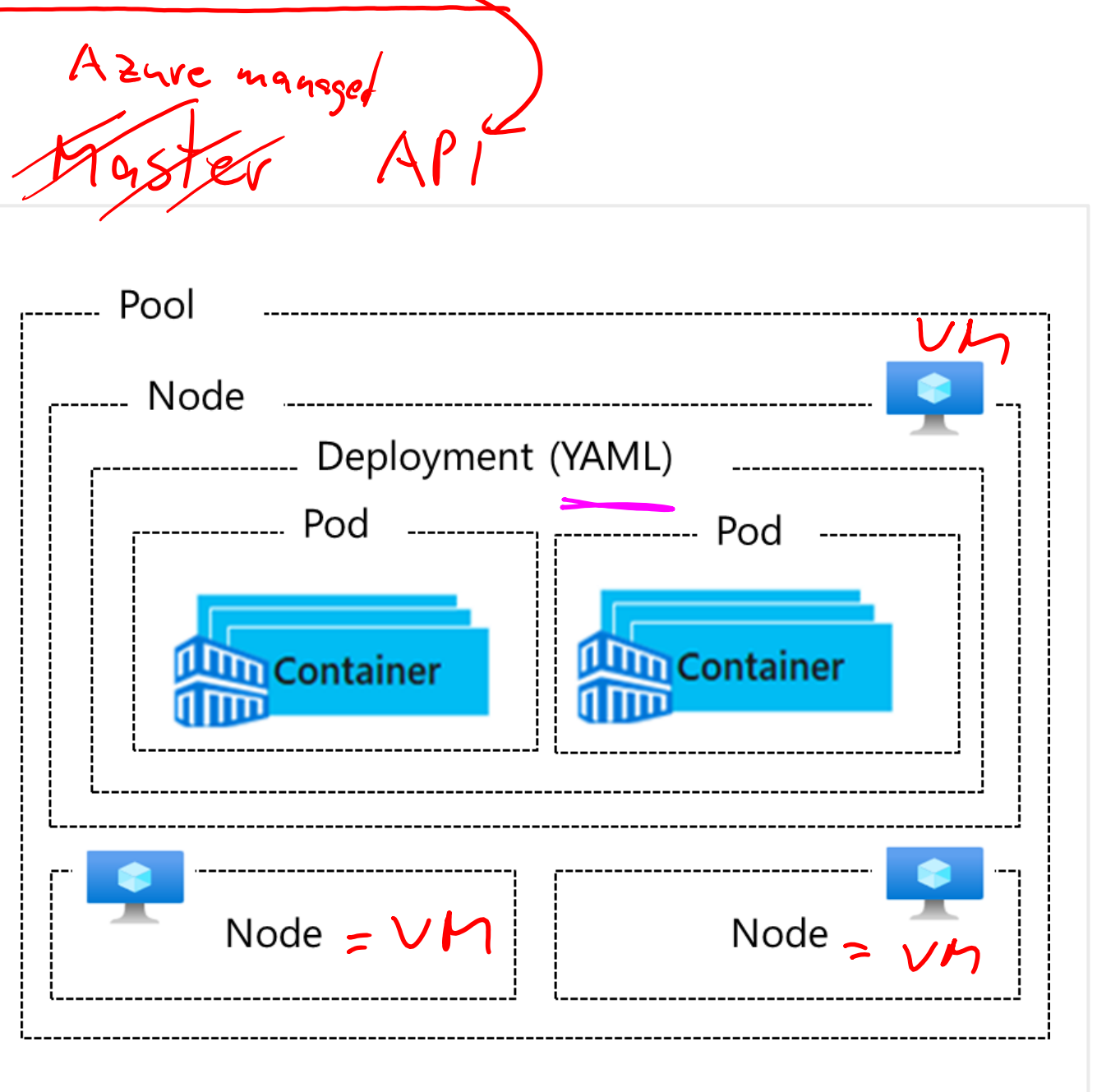
ACI ➔

- Top-level resource in Azure Container Instances
- A collection of containers that get scheduled on the same host
- The containers in the group share a lifecycle, resources, local network, and storage volumes



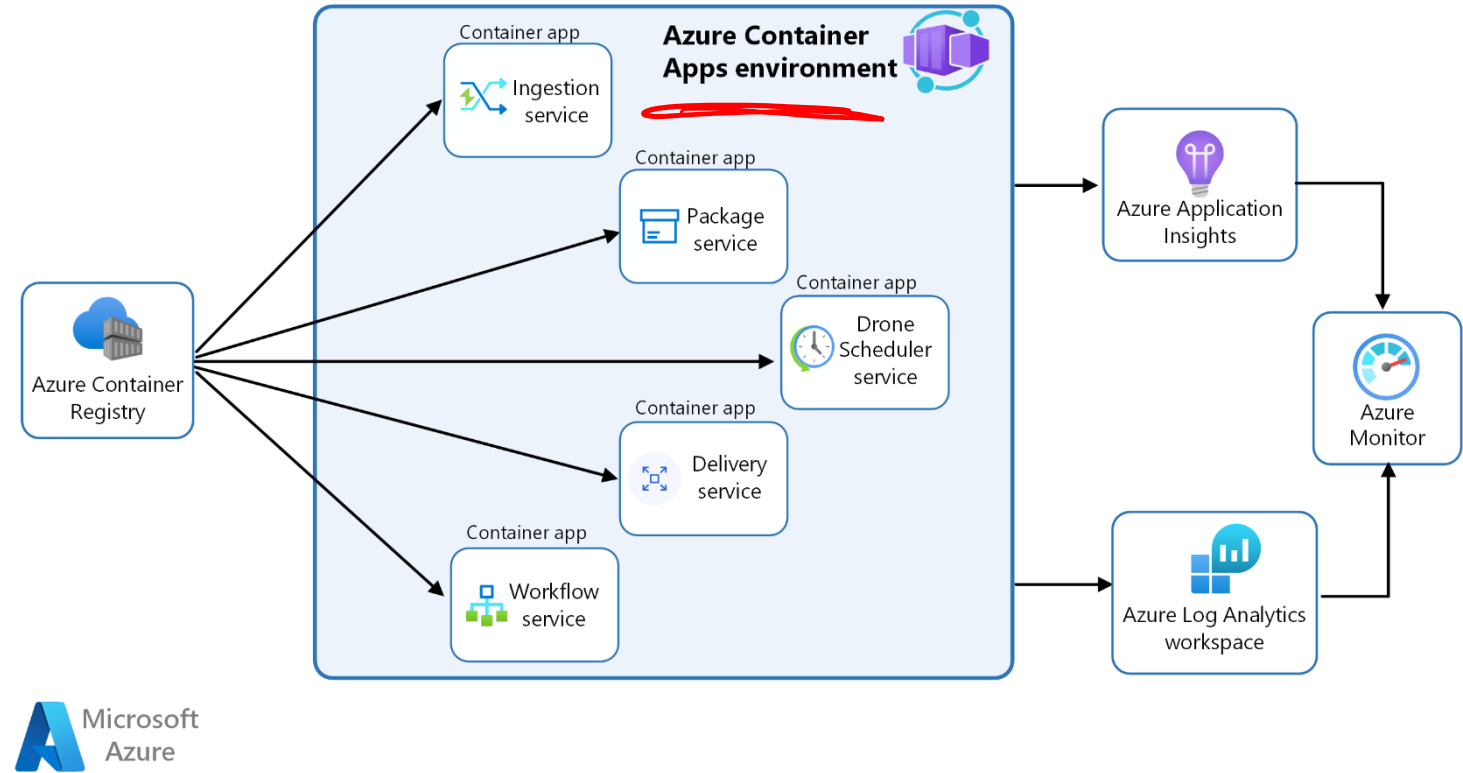
Understand AKS Terminology

Term	Description
Pools	Groups of nodes with identical configurations
Nodes	Individual VMs running containerized applications
Pods	Single instance of an application. A pod can contain multiple containers
Deployment	One or more identical pods managed by Kubernetes
Manifest	YAML file describing a deployment



Manage Containers with Azure Container Apps

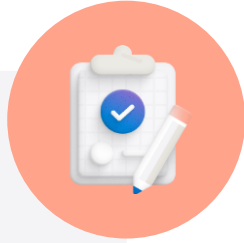
- Alternative to Azure Kubernetes Service – manages container orchestration
- The Container App environment creates a secure boundary around the apps and jobs
- The Container App runtime manages the environment (OS upgrades, scaling, versioning, and failover)



Compare container management solutions

	Azure Container Apps	Azure Kubernetes Service
Overview	Simplifies the deployment and management of microservices-based applications by abstracting away the underlying infrastructure.	Simplifies deploying a managed Kubernetes cluster in Azure by offloading the operational overhead to Azure.
Deployment	PaaS experience.	Offers more control and customization.
Management	Fully managed by Azure.	Partially managed by Azure (control plane).
Scalability	HTTP-based autoscaling and event-driven scaling.	Horizontal pod autoscaling and cluster autoscaling.
Use Cases	Rapid scaling and simplified management.	Complex, long-running applications that require full Kubernetes features.
Integration	Azure Logic Apps, Functions, and Event Grid for event-driven architecture.	Azure Policy for Kubernetes, Azure Monitor for containers, and Azure Defender for Kubernetes for comprehensive security and governance.

Learning Recap – Configure Azure Container Instances and Apps



Check your
knowledge
questions and
additional
study

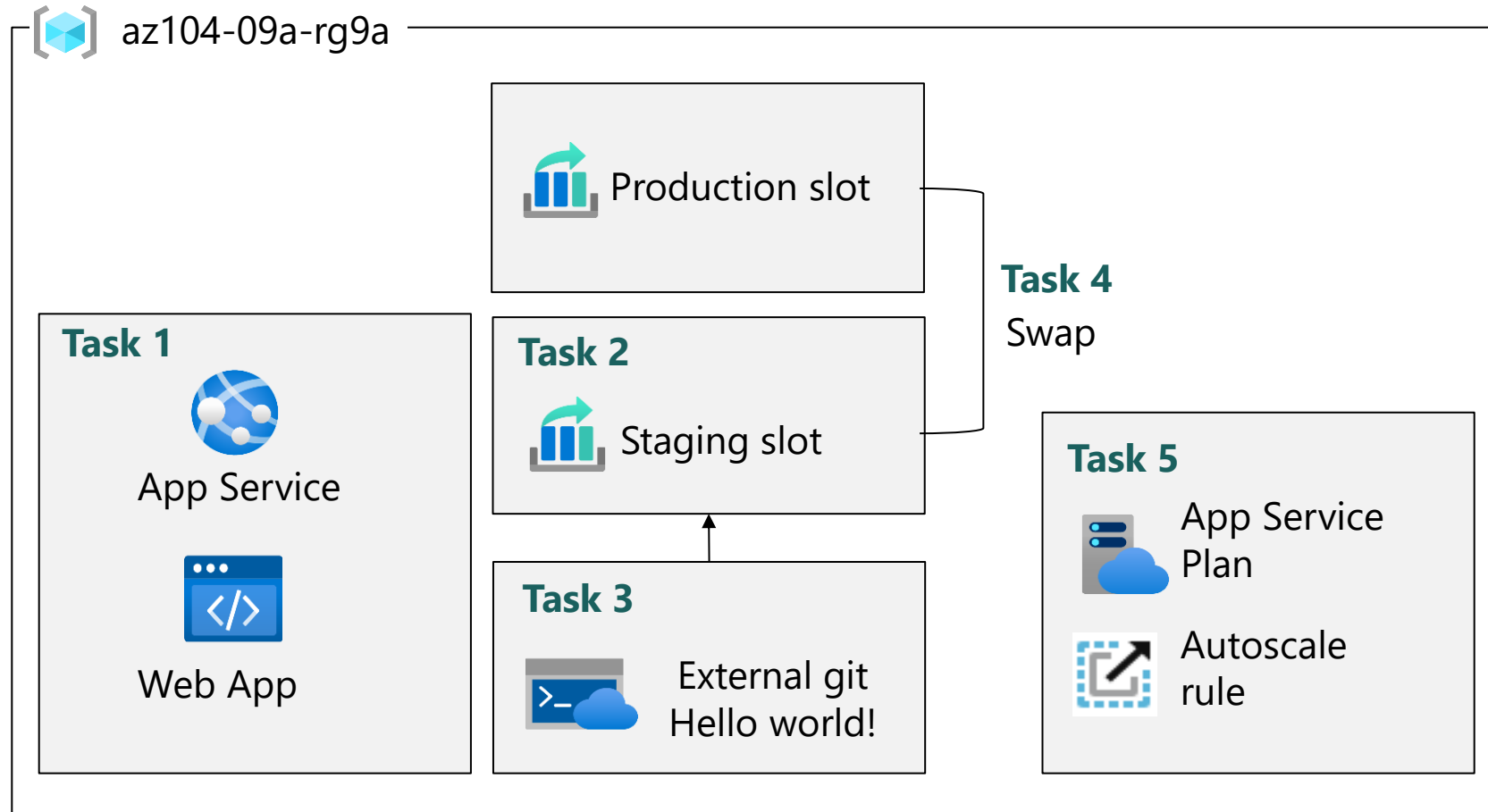
Reference modules

- [Configure Azure Container Instances](#)
- [Introduction to Docker containers](#)
- [Build a containerized web application with Docker](#)
- [Run Docker containers with Azure Container Instances](#)
- [Implement Azure Container Apps](#)

Lab 09a – Implement Web Apps
Lab 09b – Implement Azure Container Instances
Lab 09c – Implement Azure Container Apps

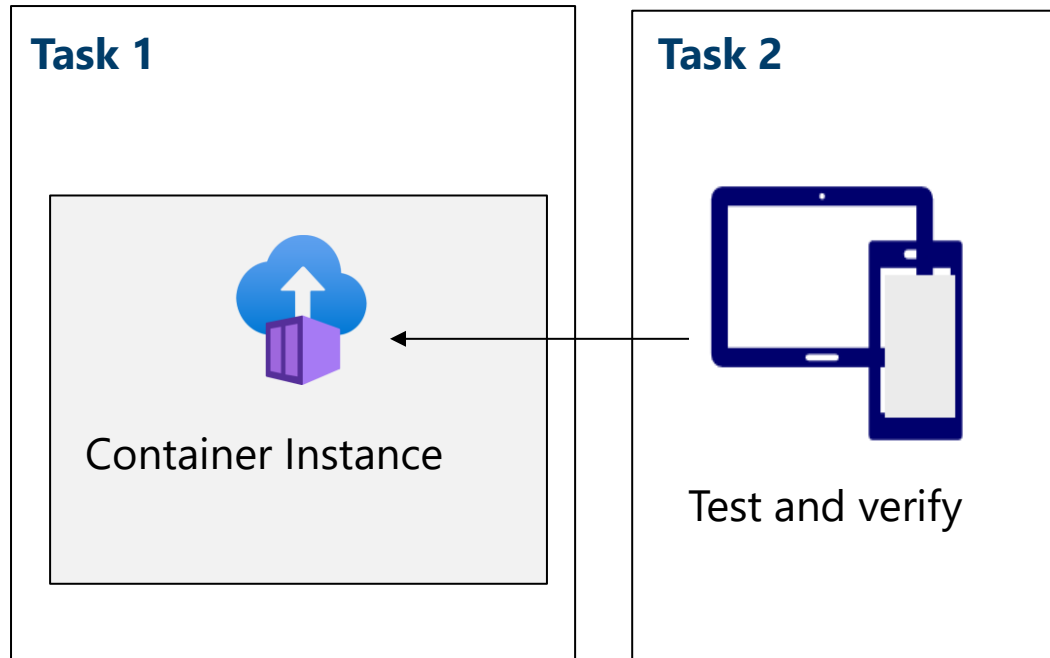


Lab 09a – Web App Architecture Diagram



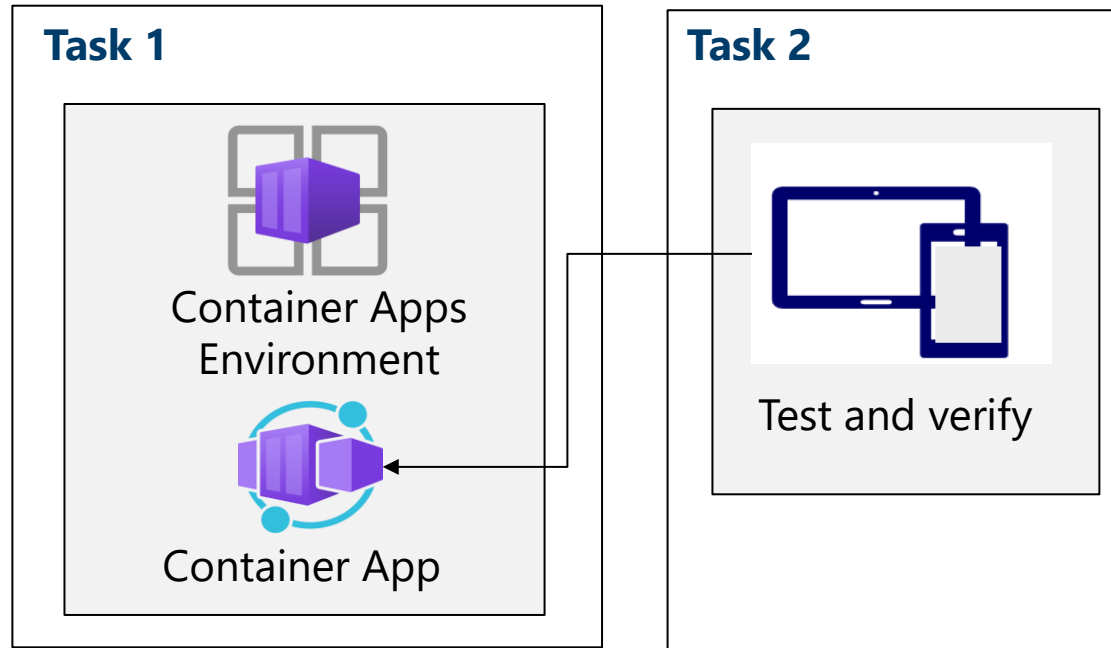
Lab 09b – Azure Container Instances Diagram

Azure Container Instances



Lab 09c – Azure Container Architecture Diagram

Azure Container Apps



End of presentation

