Microsoft

AZ-104

Administer PaaS Compute Options

AZ-104 Course Outline

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

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

Implement 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

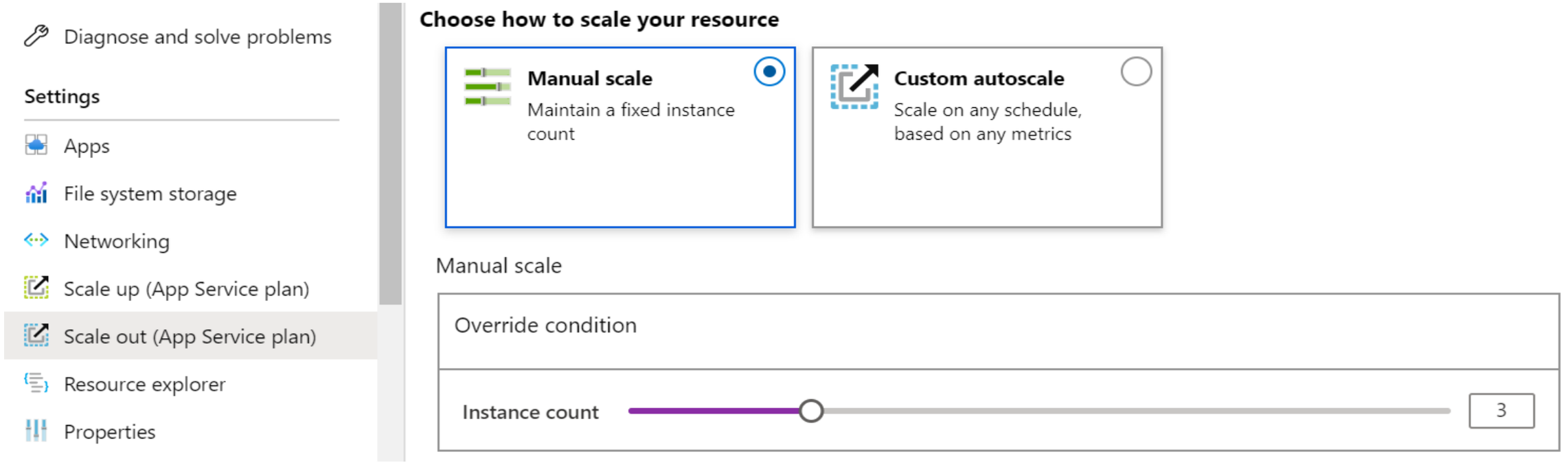
Selected Features	Free	Shared (dev/test)	Basic (dedicated dev/test)	Standard (production workloads)	Premium (enhanced scale and performance)	Isolated (high-performance, security and isolation)
Web, mobile, or API apps	10	100	Unlimited	Unlimited	Unlimited	Unlimited
Disk space	1 GB	1 GB	10 GB	50 GB	250 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



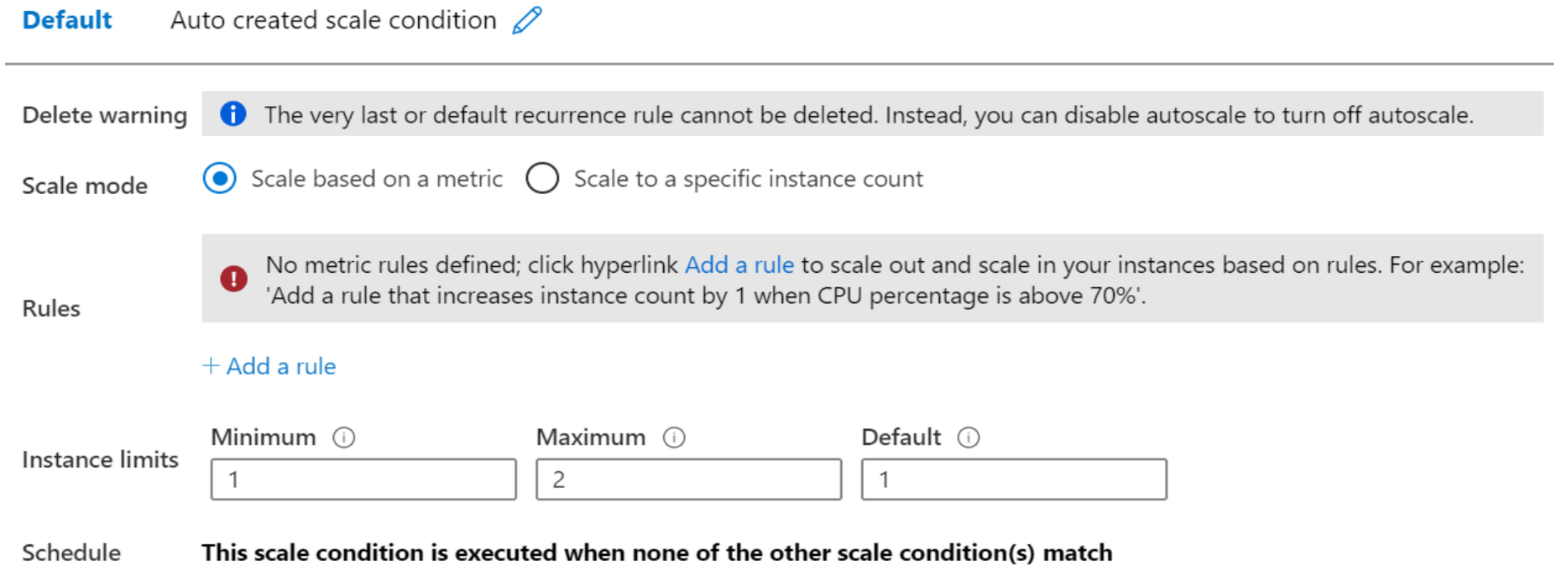
Scale up (change the App Service plan):

- 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



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

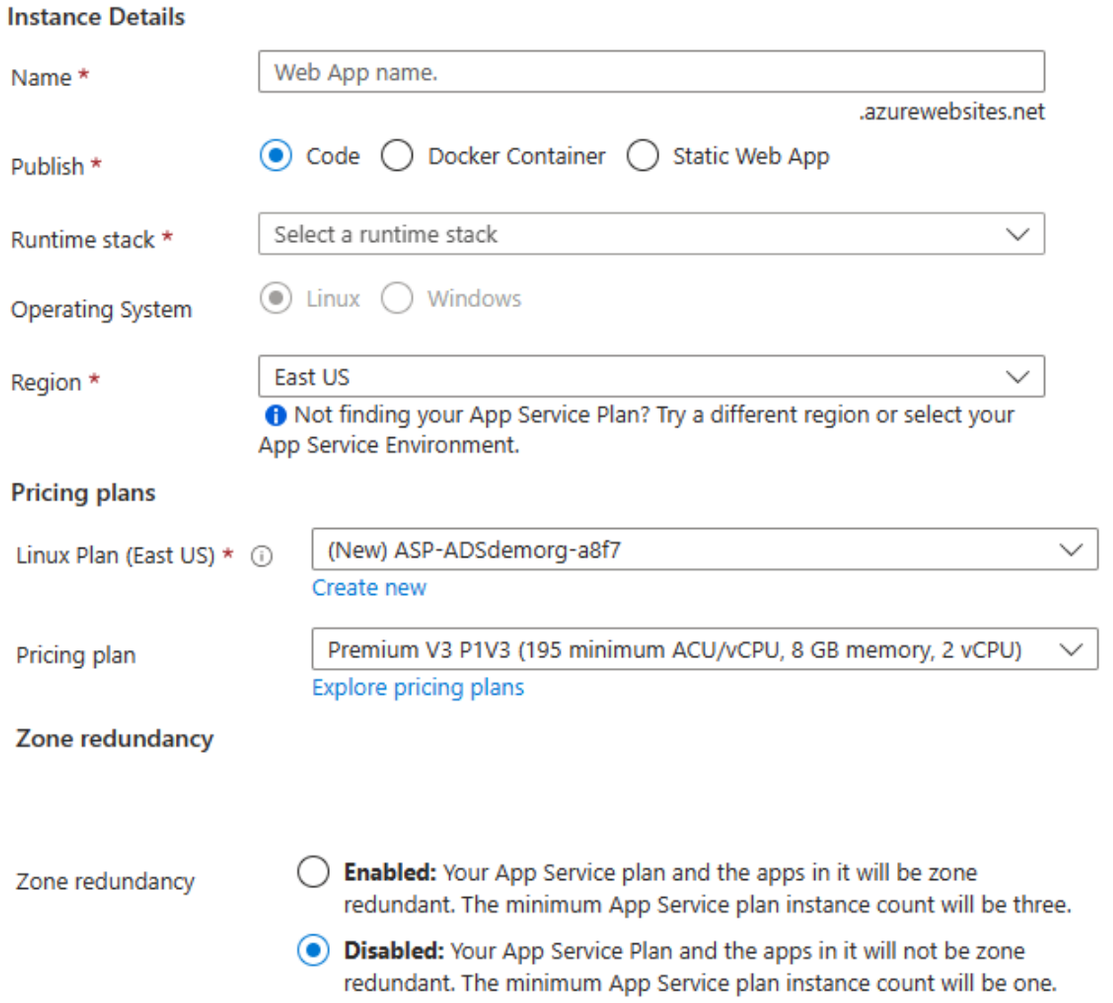
Configure Azure App Services

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

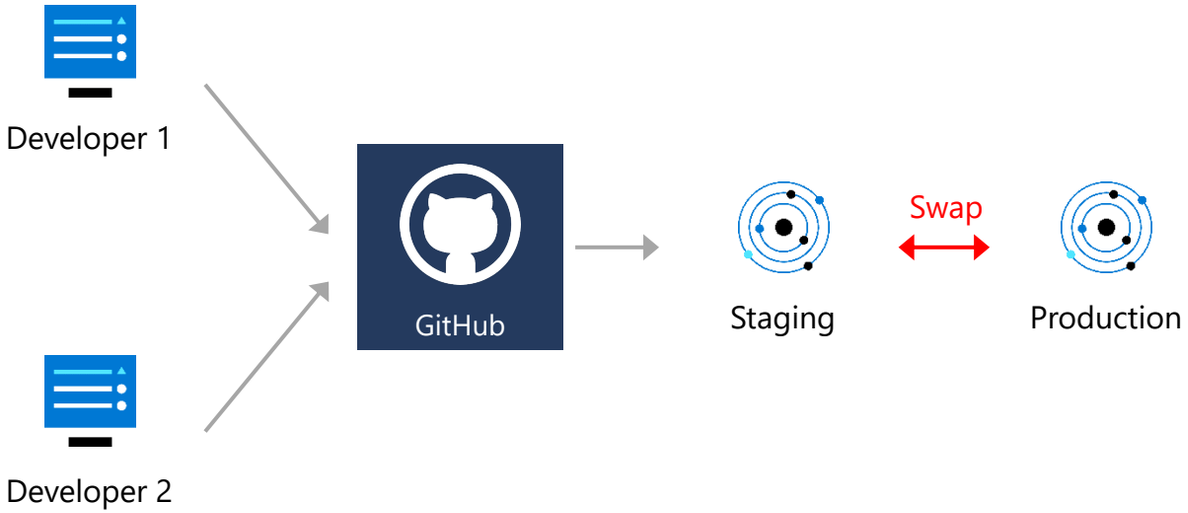
Create an App Service

- 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



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

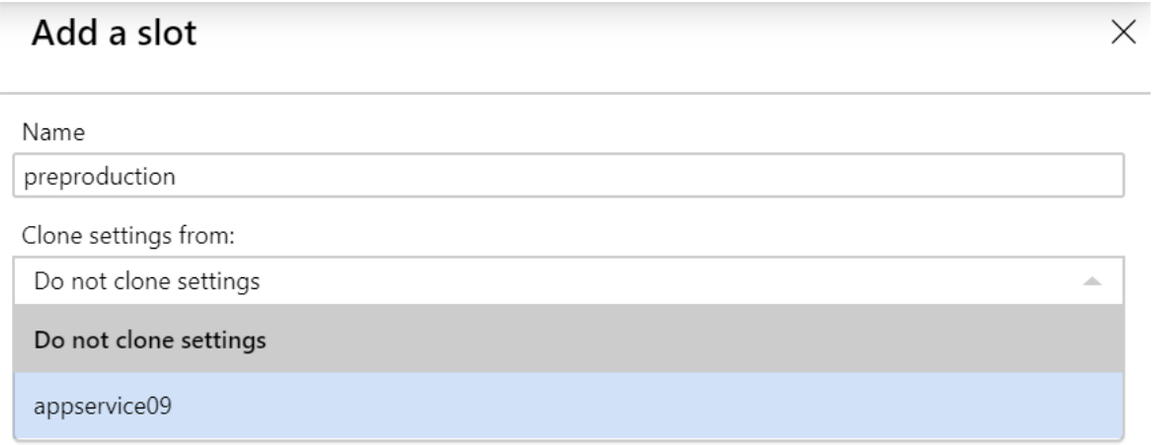
Select whether to clone an app configuration from another deployment slot

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)

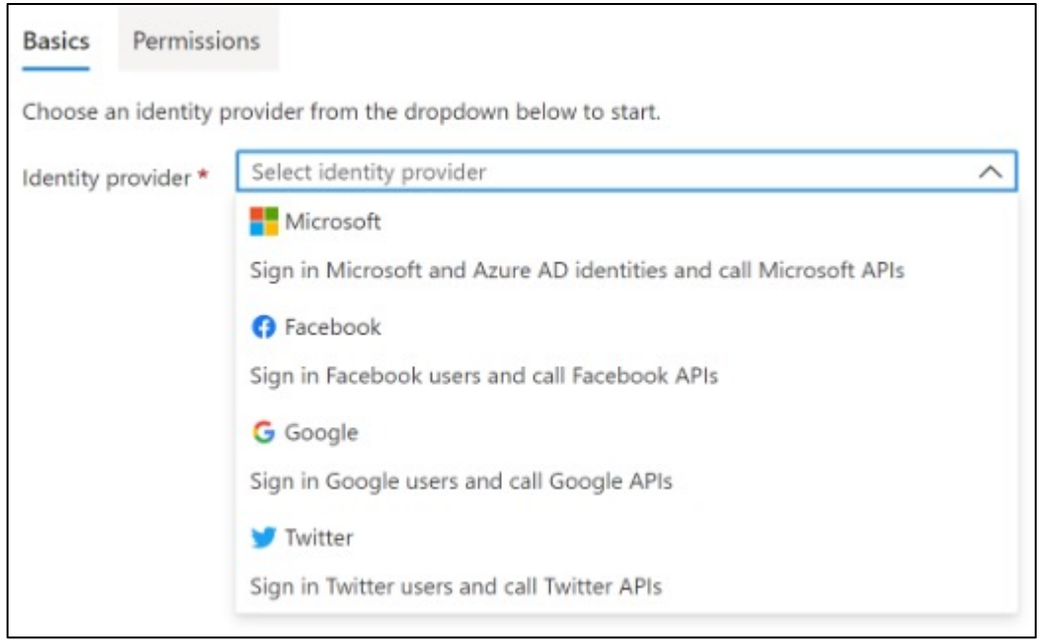
Review and edit your settings before swapping



Secure an App Service

Authentication:

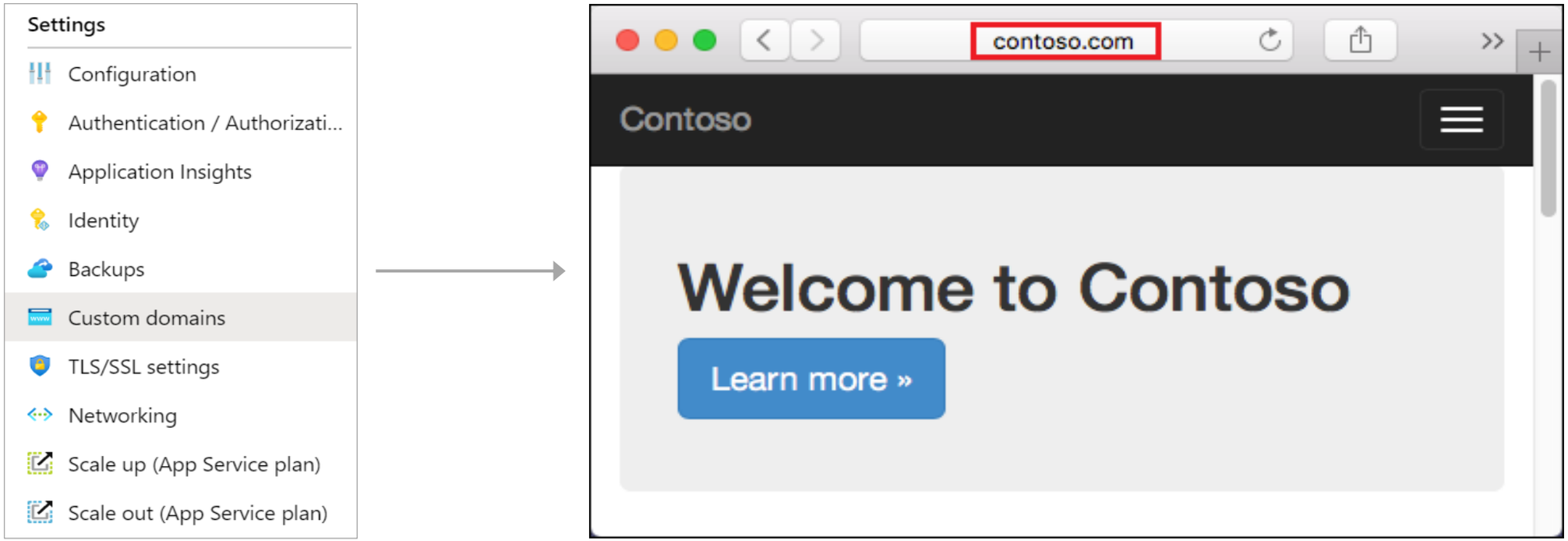
- Enable authentication – default anonymous
- Log in with a third-party identity provider



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

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

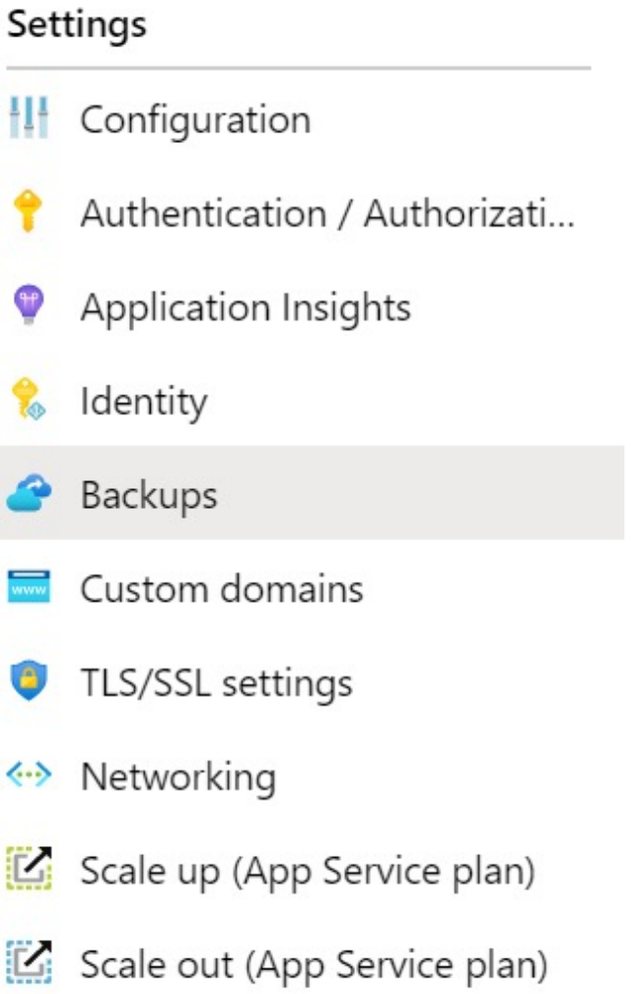
Backup the configuration, file content, and database connected to the app

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



Configure Azure Container Instances

Learning Objectives - Configure Azure Container Instances

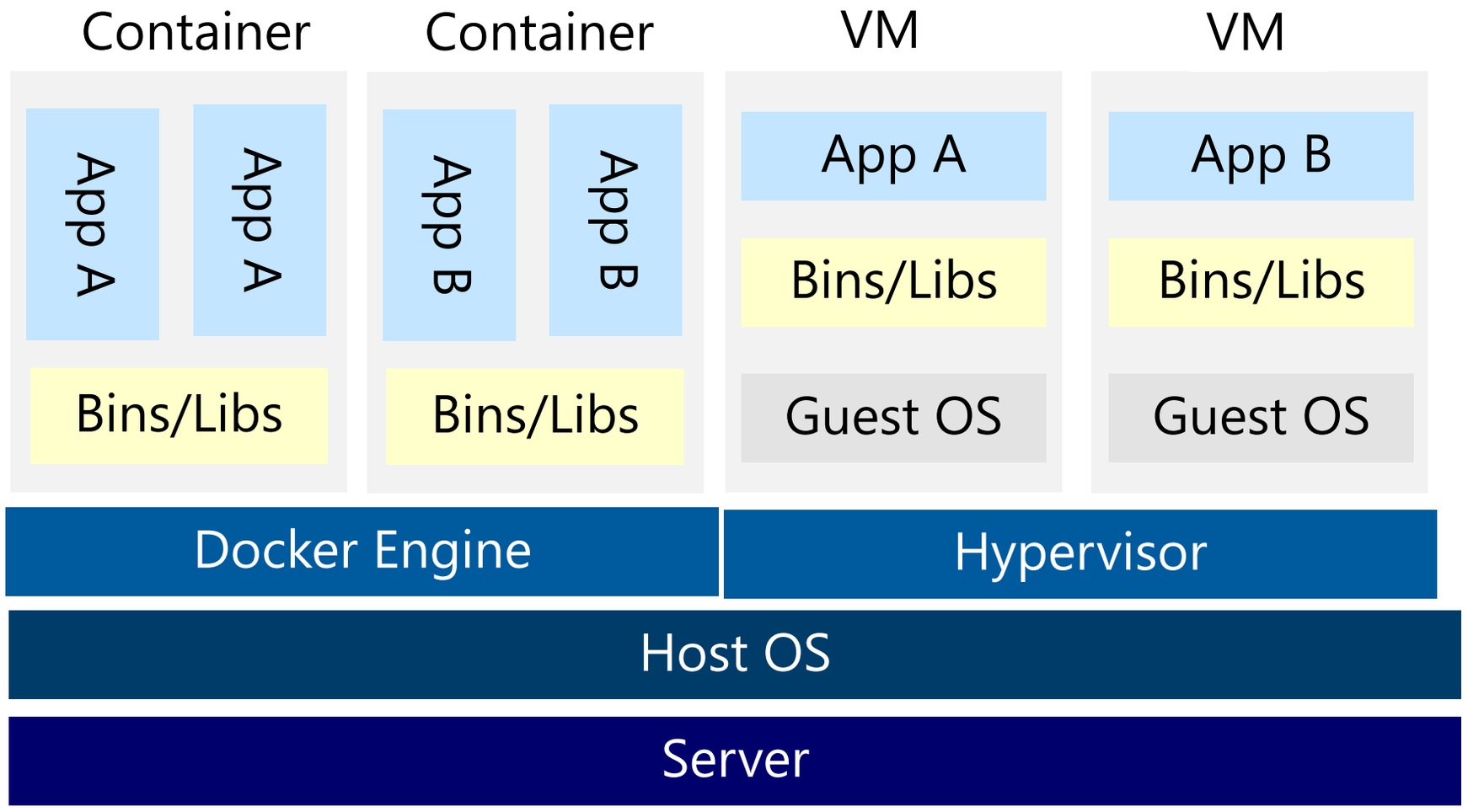
- Compare Containers to Virtual Machines
- Explore Azure Container Instances Benefits
- Implement Container Groups
- Understand the Docker Platform (optional)
- Demonstration – Configure Azure Container Instances
- Manage Containers with Azure Container Apps (new)
- Demonstration – Configure Azure Container Apps
- Learning Recap

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

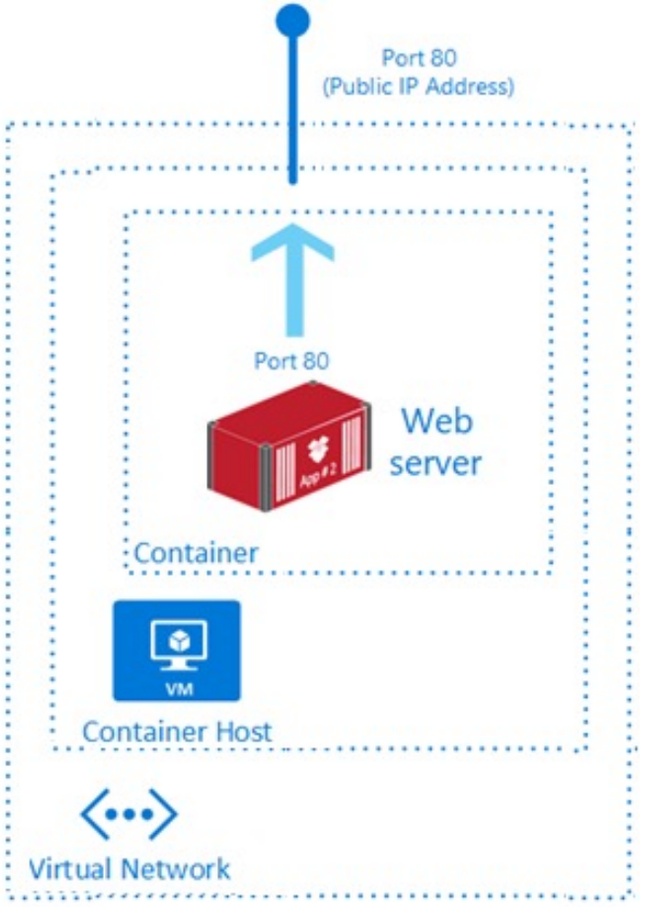
Compare Containers to Virtual Machines

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



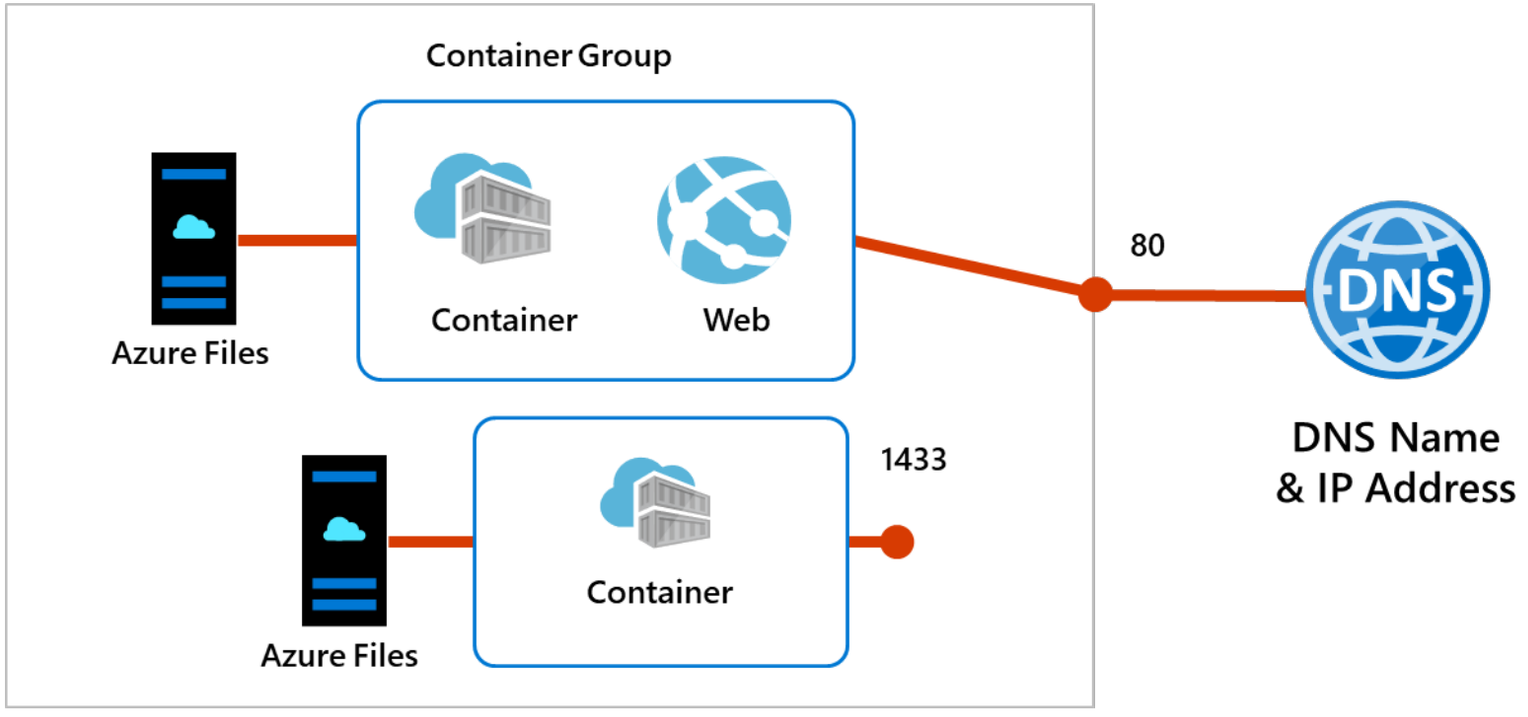
Explore Azure Container Instances Benefits

- 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

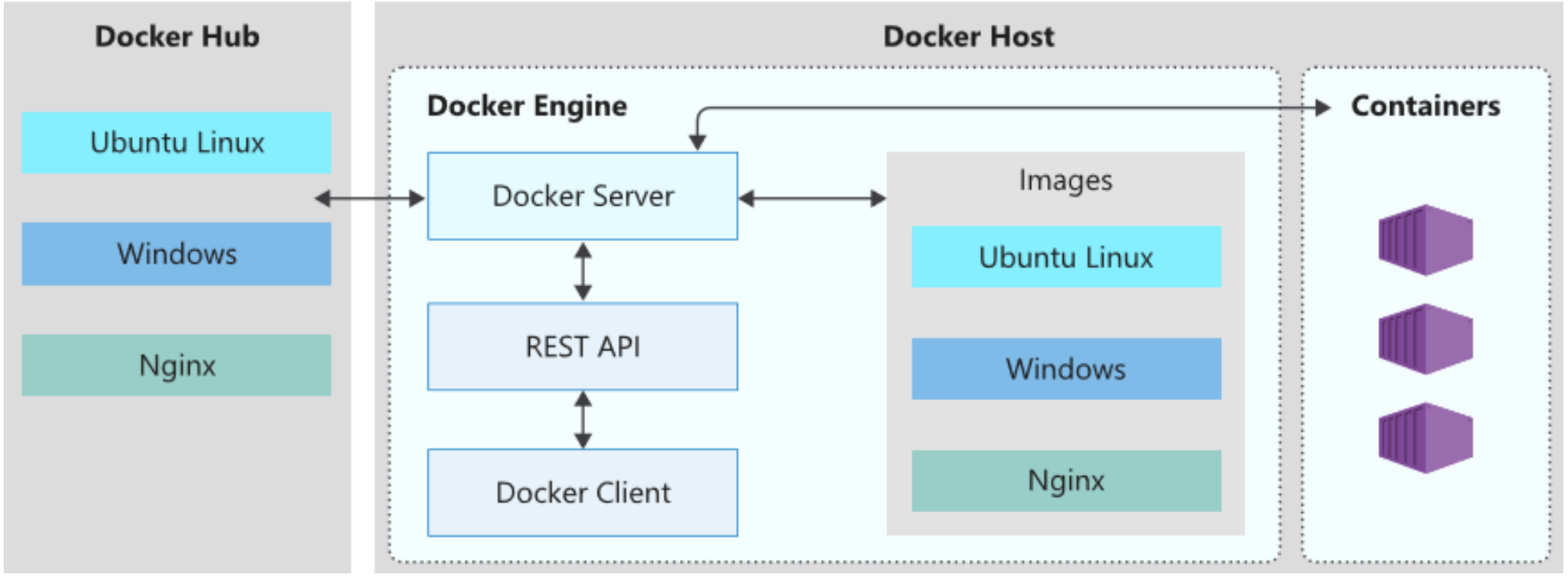


Top-level resource in Azure Container Instances

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 the Docker Platform



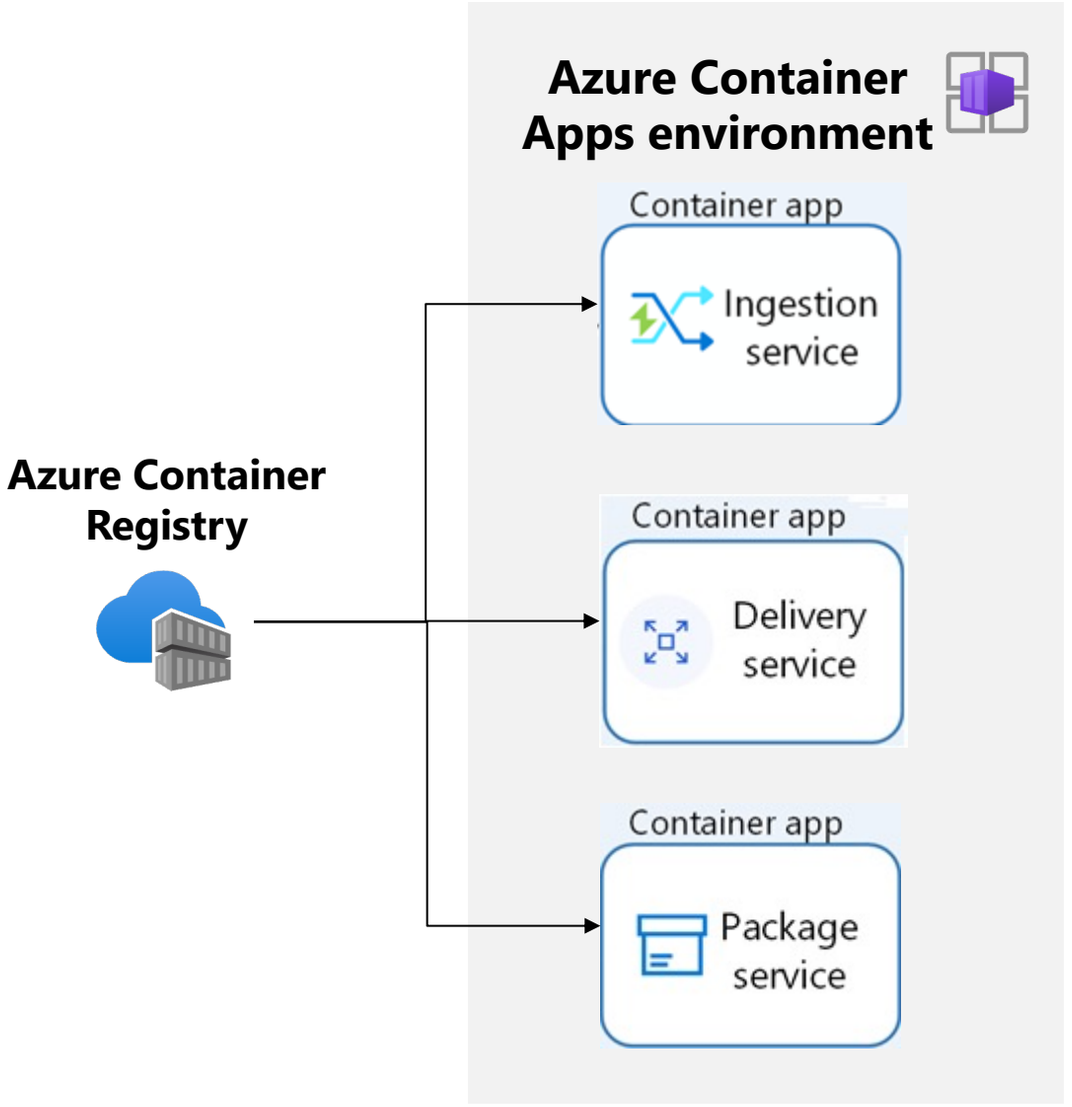
Enables developers to host applications within a container

A container is a standardized “unit of software” that contains everything required for an application to run

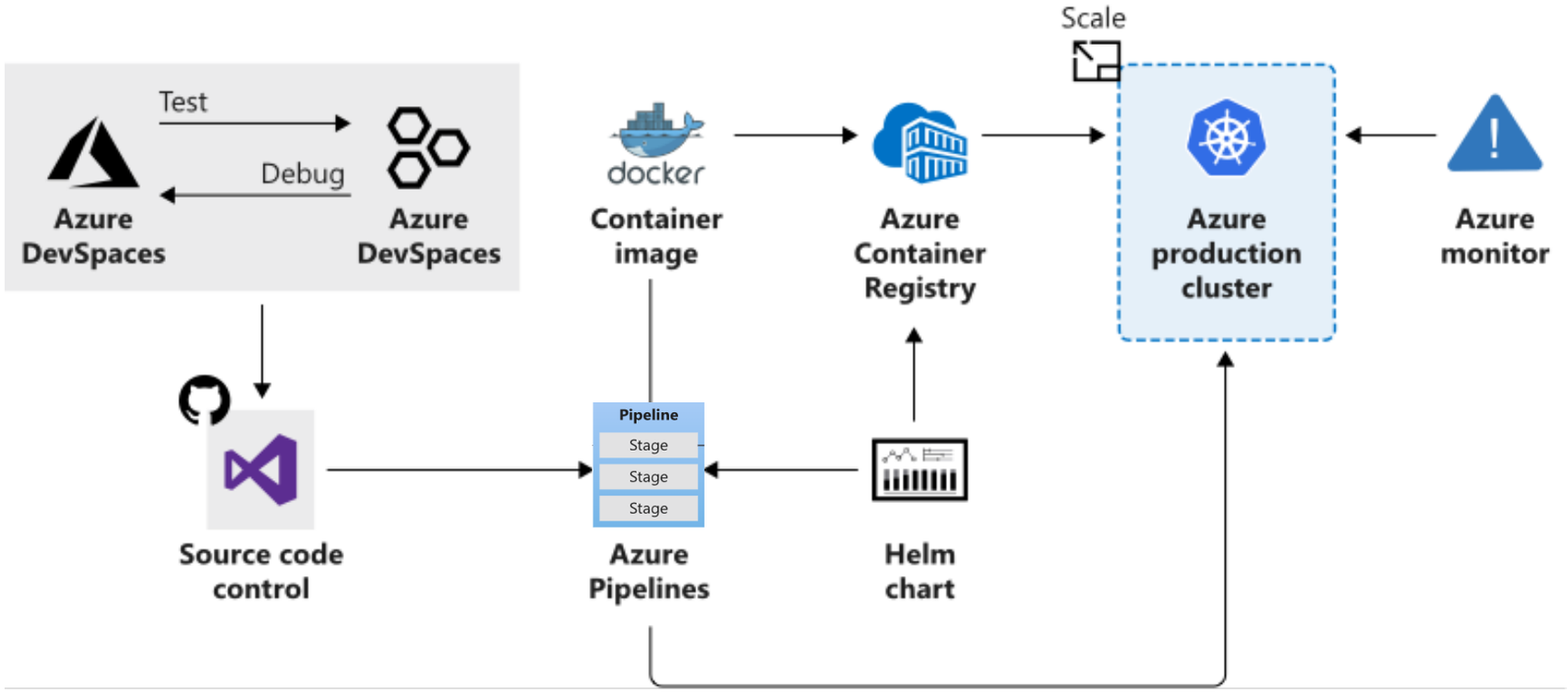
Available on both Linux and Windows and can be hosted on Azure

Manage Containers with Azure Container Apps

- Alternative to Azure Kubernetes Service
- Integrates with Azure Container Registry
- Simplifies complex infrastructures
- Manages container orchestration



Azure Kubernetes Service



Manages health monitoring and maintenance

Performs simple cluster scaling

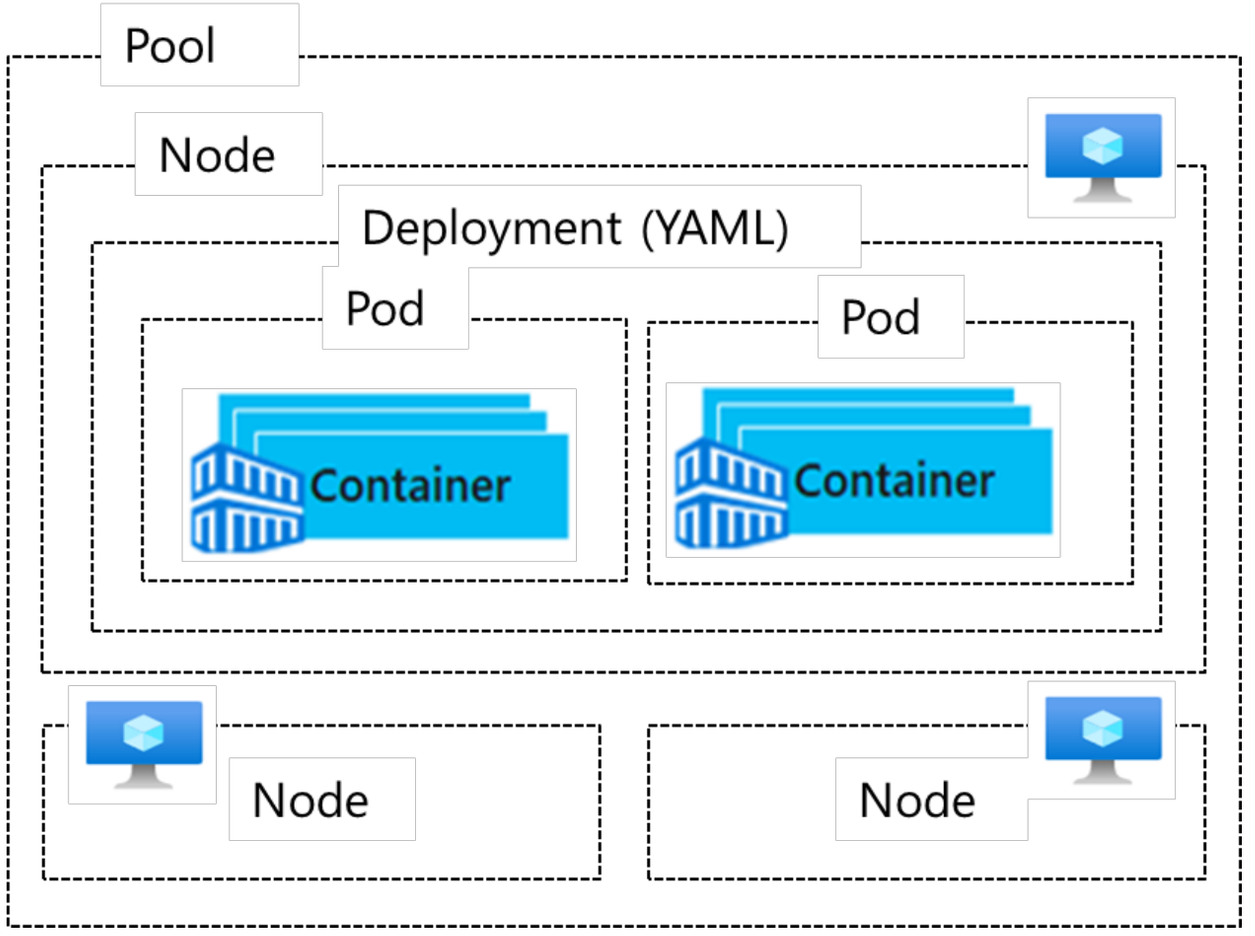
Enables nodes to be fully managed by Microsoft

You're responsible only for managing the agent nodes

You pay only for the agent nodes

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



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

Lab 09a – Implement web apps

You need to evaluate the use of Azure Web apps for hosting Contoso's web sites, hosted currently in the company's on-premises data centers. The web sites are running on Windows servers using PHP runtime stack. You also need to determine how you can implement DevOps practices by leveraging Azure web apps deployment slots.

Objectives

Task 1: Create an Azure web app

Task 2: Create a staging deployment slot

Task 3: Configure web app deployment settings

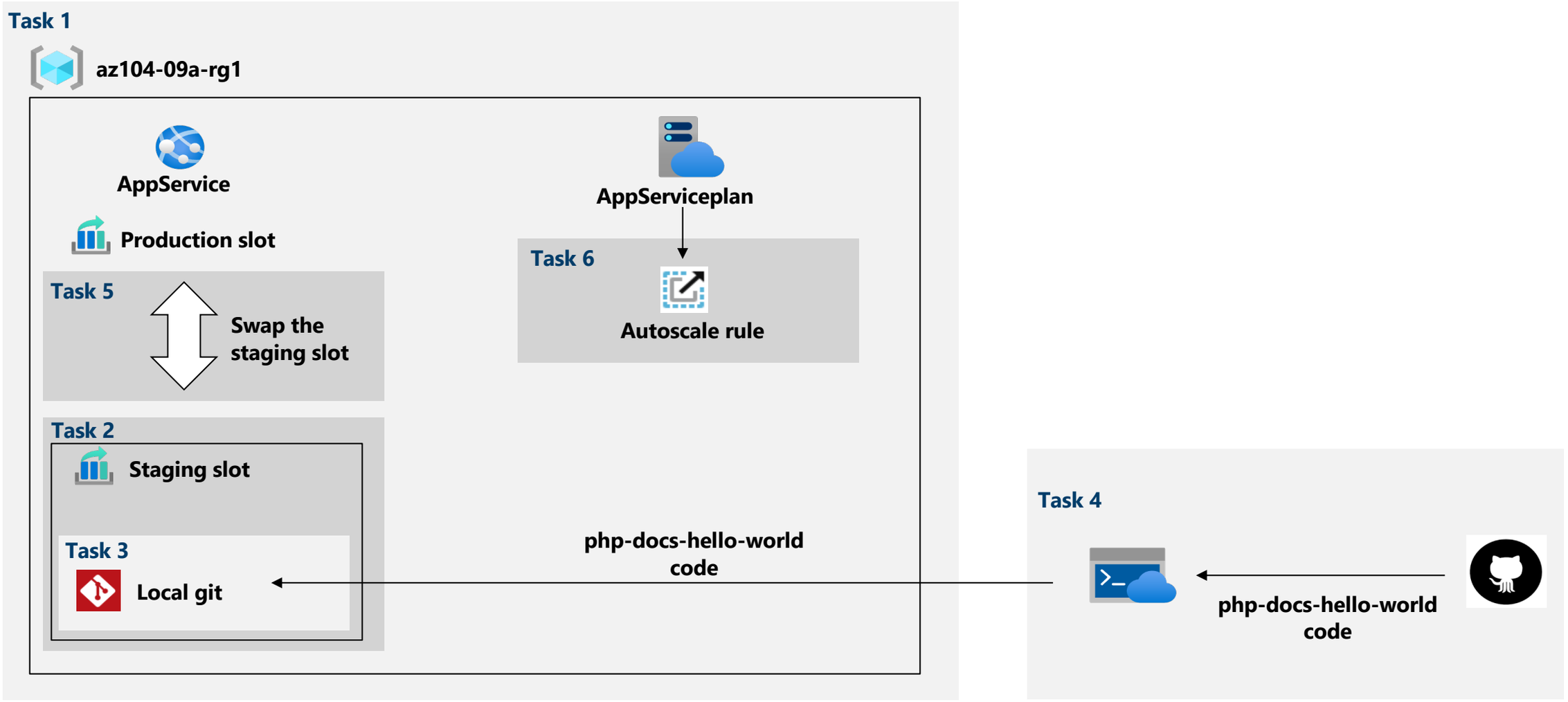
Task 4: Deploy code to the staging deployment slot

Task 5: Swap the staging slots

Task 6: Configure and test autoscaling of a web app

Next slide for an architecture diagram

Lab 09a – Architecture diagram



Lab 09b – Implement Azure Container Instances

Contoso wants to find a new platform for its virtualized workloads. You identified several container images that can be leveraged to accomplish this objective. Since you want to minimize container management, you plan to evaluate the use of Azure Container Instances for deployment of Docker images

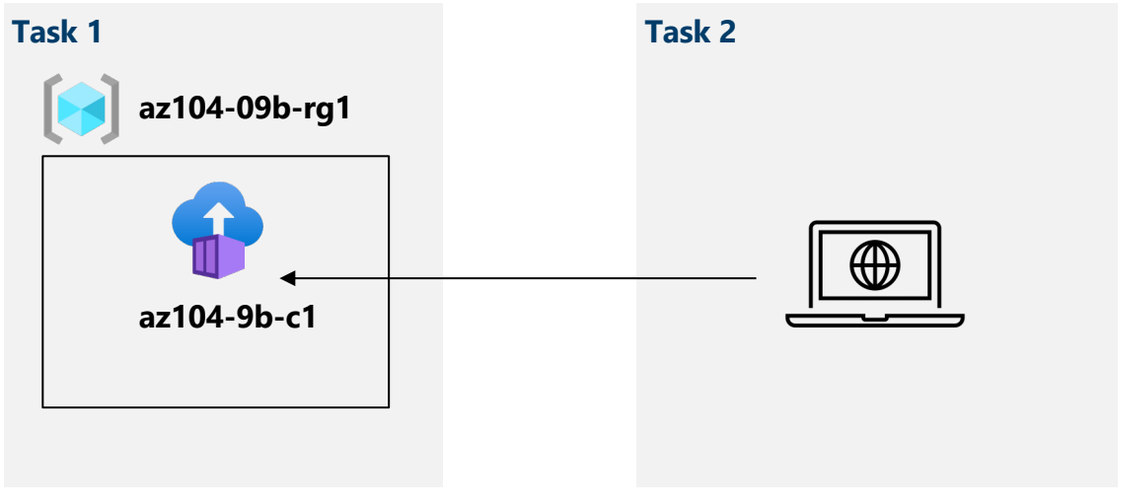
Objectives

Task 1: Deploy a Docker image by using the Azure Container Instance

Task 2: Review the functionality of the Azure Container Instance

Next slide for an architecture diagram

Lab 09b – Architecture diagram



Lab 09c – Implement Azure Container Apps

Azure Container Apps enables you to run microservices and containerized applications on a serverless platform. With Container Apps, you enjoy the benefits of running containers while leaving behind the concerns of manually configuring cloud infrastructure and complex container orchestrators.

Objectives

Task 1: Create and configure the Azure Container App and environment

Task 2: Deploy the Azure Container App

Task 3: Test and verify the Azure Container App

End of presentation