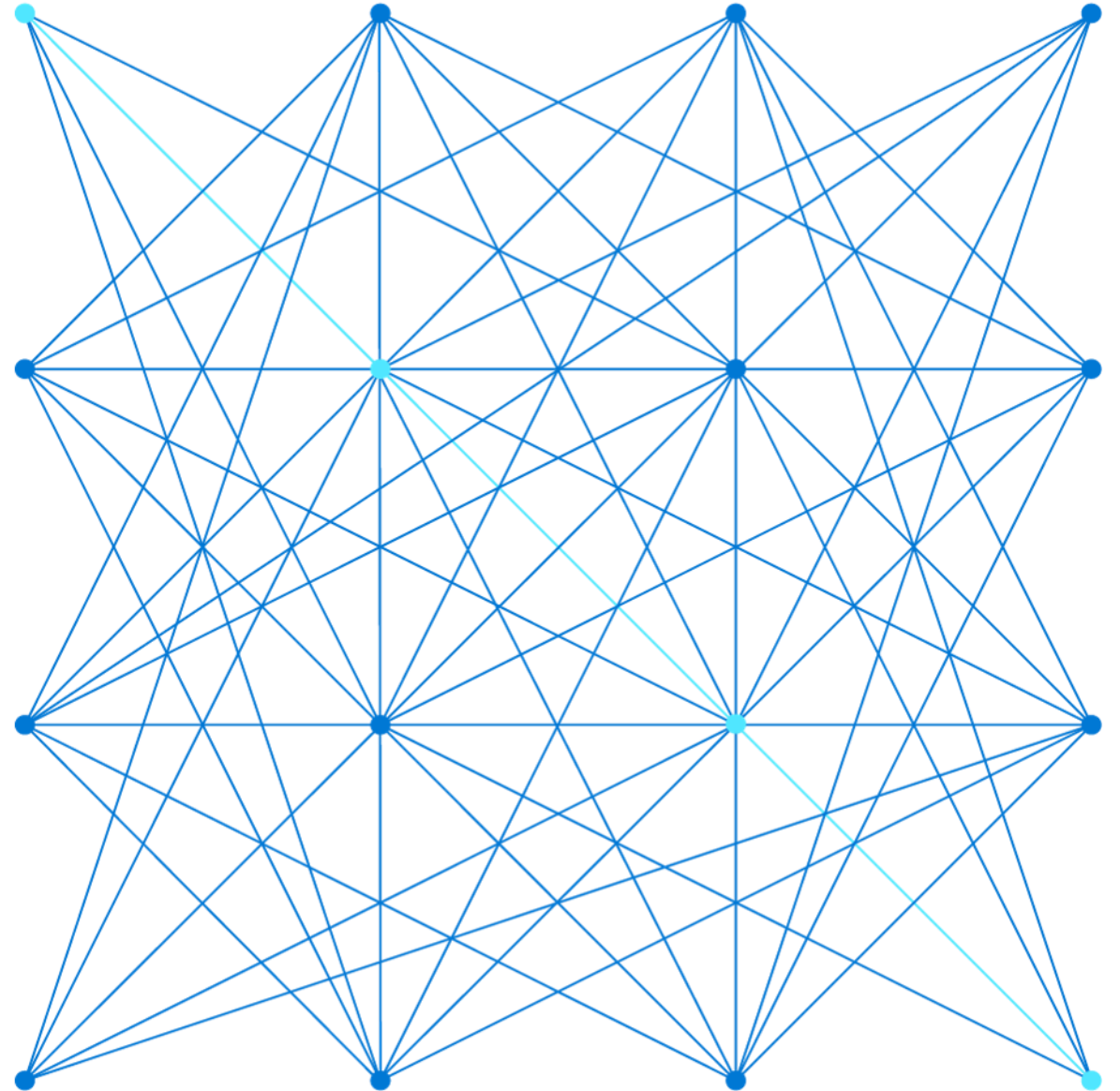


AZ-104

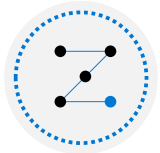
Administer PaaS Compute Options



About this course: Course Outline



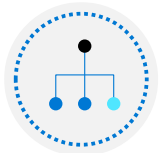
01: Administer Identity



02: Administer Governance and Compliance



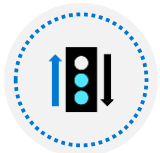
03: Administer Azure Resources



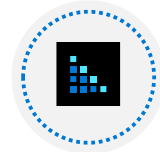
04: Administer Virtual Networking



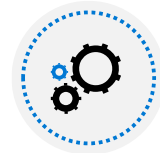
05: Administer Intersite Connectivity



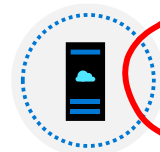
06: Administer Network Traffic Management



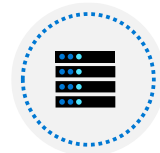
07: Administer Azure Storage



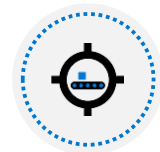
08: Administer Azure Virtual Machines



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](#)



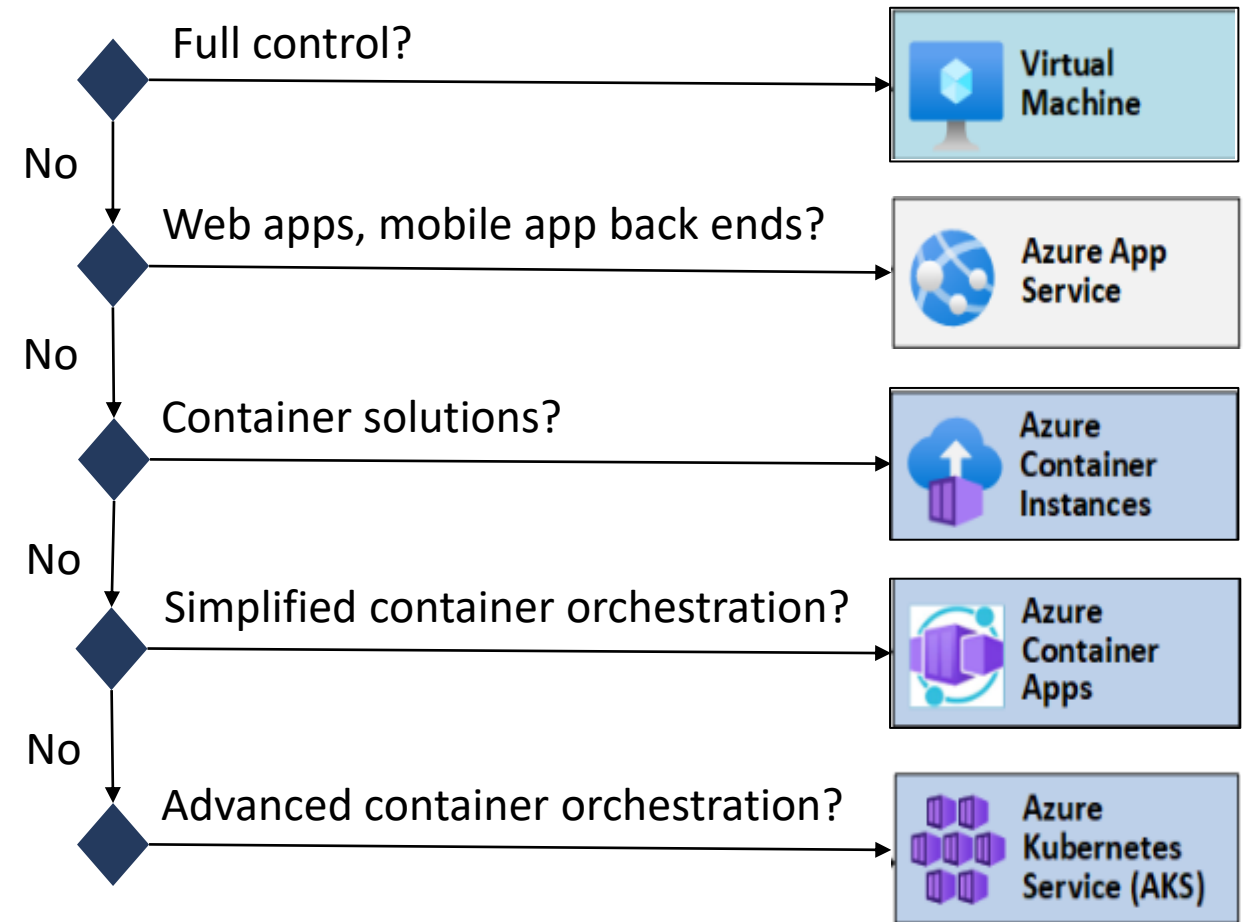
[Lab 09a - Implement Web Apps](#)

[Lab 09b - Implement Azure Container Instances](#)

Lab 09c – Implement Azure Container Apps

Administer PaaS Compute Options

- Describe the differences between containers and virtual machines.
- What is an App Service plan? Things to consider when selecting?
- What are deployment slots? Usage cases for slots?
- List at least three admin tasks for web apps.



Configure Azure App Service Plans



Configure Azure App Service Plans Introduction



Implement Azure App Service Plans



Determine App Service Plan Pricing



Scale Up and Scale Out the App Service Plan



Configure App Service Plan Scaling

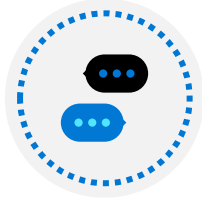


Demonstration – Configure Azure App Service Plans

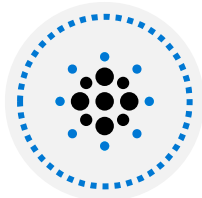


Summary and Resources

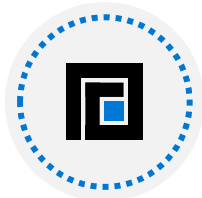
Implement Azure App Service Plans



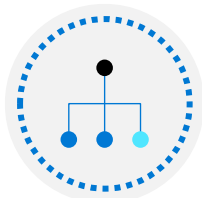
Define a set of compute resources for a web app to run



Determines performance, price, and features



One or more apps can be configured to run in the same App Service plan



Region where compute resources will be created

Number of virtual machine instances

Size of virtual machine instances

Pricing tier (next slide)

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

The screenshot shows the Azure App Service Scale settings page. On the left is a navigation pane with the following items: 'Diagnose and solve problems' (with a wrench icon), 'Settings' (with a gear icon), 'Apps' (with a cloud icon), 'File system storage' (with a bar chart icon), 'Networking' (with a network icon), 'Scale up (App Service plan)' (with a green up arrow icon), 'Scale out (App Service plan)' (with a blue up arrow icon, highlighted with a grey background), 'Resource explorer' (with a folder icon), and 'Properties' (with a list icon). The main content area is titled 'Choose how to scale your resource'. It contains two options: 'Manual scale' (with a green bar chart icon, a blue radio button, and the text 'Maintain a fixed instance count') and 'Custom autoscale' (with a blue dashed box and arrow icon, a white radio button, and the text 'Scale on any schedule, based on any metrics'). Below these, the 'Manual scale' section is expanded, showing an 'Override condition' text box and an 'Instance count' slider. The slider is a horizontal bar with a purple segment on the left and a white segment on the right, with a white circle marker positioned at the value 3. To the right of the slider is a small box containing the number 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

Default Auto created scale condition 




Delete warning  The very last or default recurrence rule cannot be deleted. Instead, you can disable autoscale to turn off autoscale.

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

Rules  No metric rules defined; click hyperlink [Add a rule](#) to scale out and scale in your instances based on rules. For example: 'Add a rule that increases instance count by 1 when CPU percentage is above 70%'.

[+ Add a rule](#)

Instance limits

| Minimum  | Maximum  | Default  |
|---|---|---|
| <input type="text" value="1"/> | <input type="text" value="2"/> | <input type="text" value="1"/> |

Schedule **This scale condition is executed when none of the other scale condition(s) match**

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)

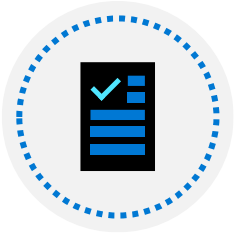
Can implement multiple rules – combine metrics and schedules

Don't forget to scale in

Demonstration – Configure App Service plans



Create a simple App Service Plan in the Azure Portal



Configure scale-up and scale-out

Summary and Resources – Configure Azure App Service Plans

Knowledge Check Questions

Microsoft Learn Modules (docs.microsoft.com/Learn)


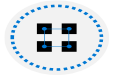





[Scale an App Service web app to efficiently meet demand with App Service scale up and scale out](#)



Configure Azure App Services



Configure Azure App Services Introduction

-  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 – Configure Azure App Services
-  Summary and Resources

Implement Azure App Service



.NET



Node.js



PHP



Java



Python (on Linux)



HTML



Custom Windows/Linux Container

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

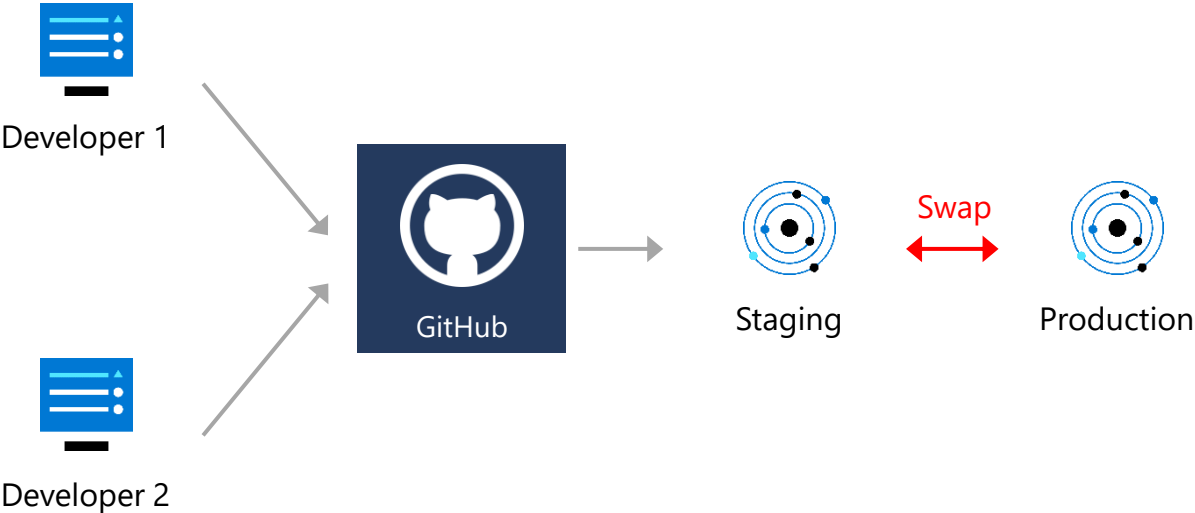
Zone redundancy

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

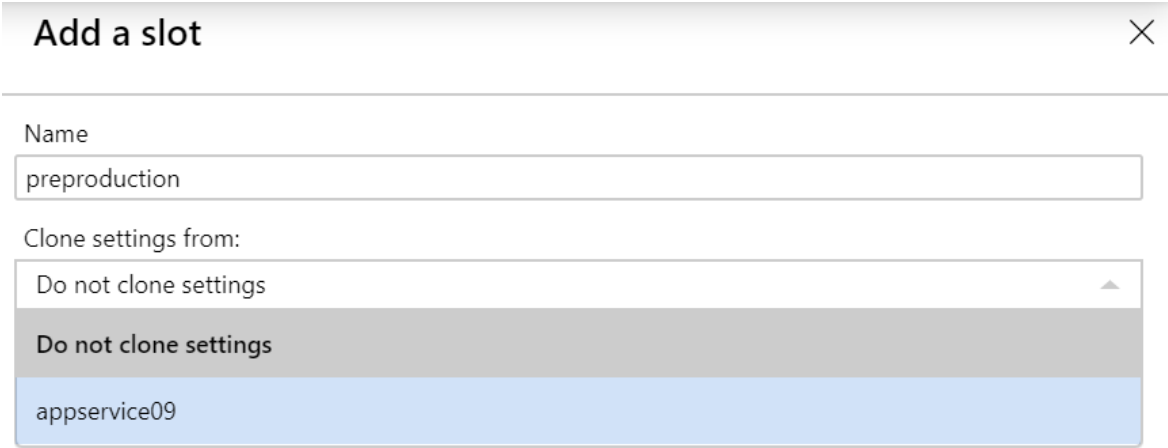
Select whether to clone an app configuration from another deployment slot

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



The screenshot shows a modal dialog titled "Add a slot" with a close button (X) in the top right corner. Inside the dialog, there is a "Name" label followed by a text input field containing the value "preproduction". Below this is a "Clone settings from:" label followed by a dropdown menu. The dropdown menu is open, showing three options: "Do not clone settings" (which is currently selected and highlighted in grey), "Do not clone settings" (a second, identical option), and "appservice09" (which is highlighted in blue).

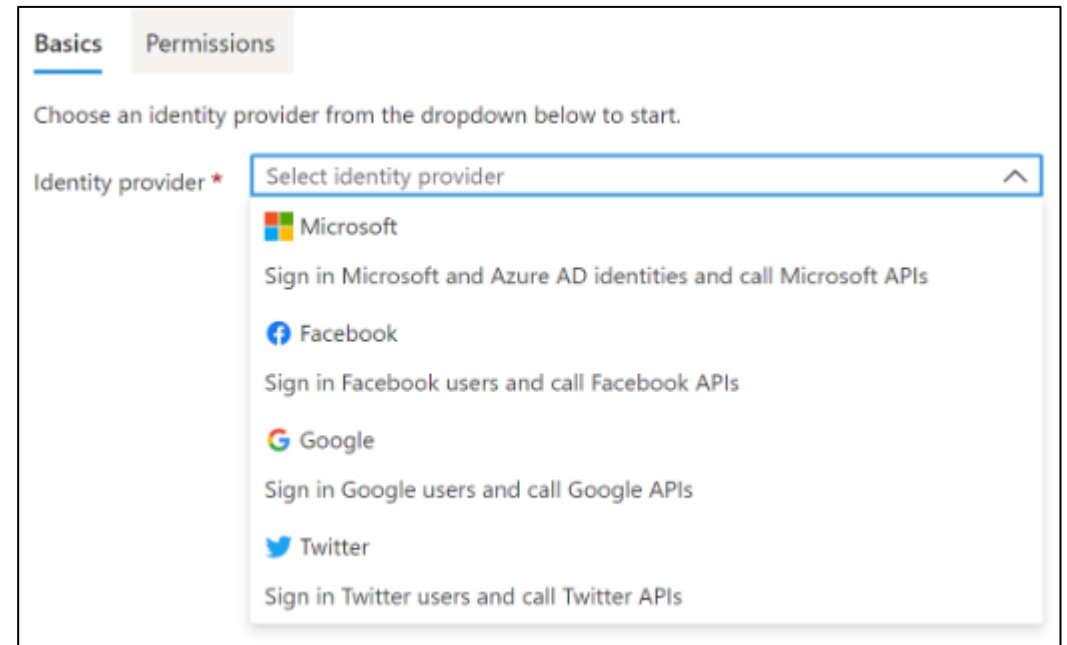
Secure an App Service

Authentication:

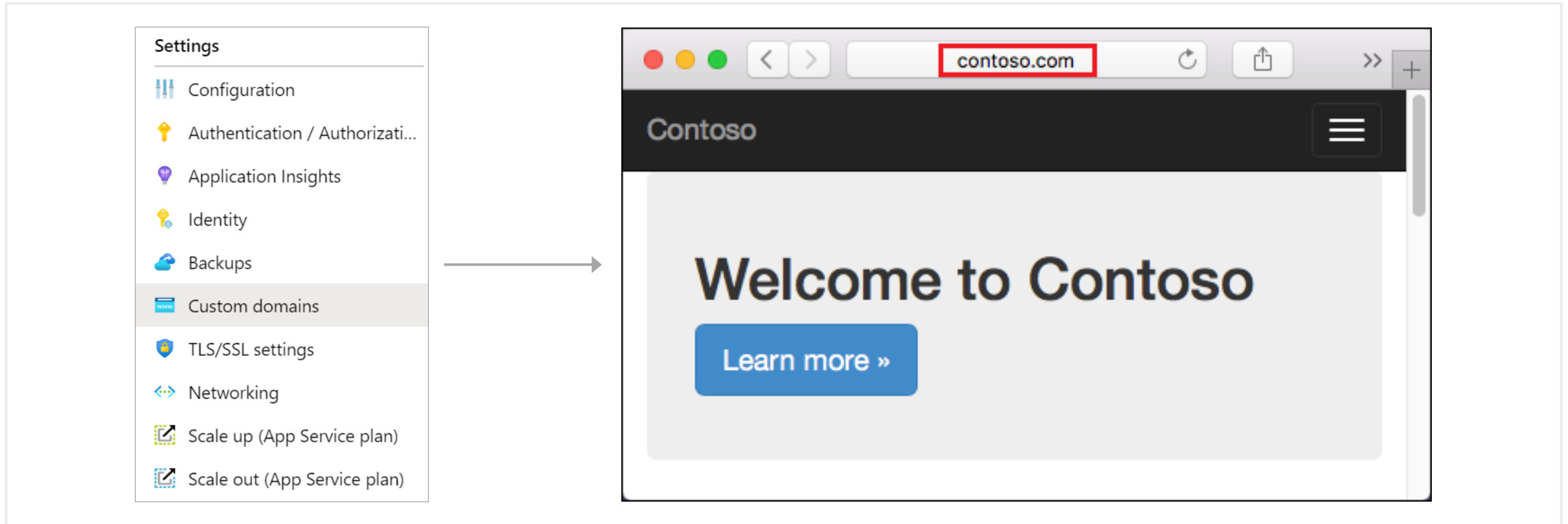
- Enable authentication – default anonymous
- Log in with a third-party identity provider

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

Settings



Configuration



Authentication / Authorizati...



Application Insights



Identity



Backups



Custom domains



TLS/SSL settings



Networking



Scale up (App Service plan)



Scale out (App Service plan)

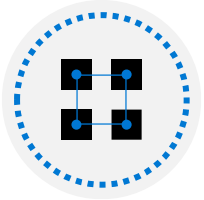
Demonstration – Configure Azure App Services



Create a Web App in the Azure Portal



Test the Web App



Explore deployment slots

Summary and Resources – Configure Azure App Services

Knowledge Check Questions

Microsoft Learn Modules (docs.microsoft.com/Learn)



[Host a web application with Azure App Service \(Sandbox\)](#)

[Stage a web app deployment for testing and rollback by using App Service deployment slots](#)

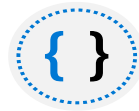
[Dynamically meet changing web app performance requirements with autoscale rules](#)

A sandbox indicates a hands-on exercise.

Configure Azure Container Instances



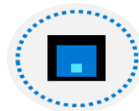
Configure Azure Container Instances Introduction



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)



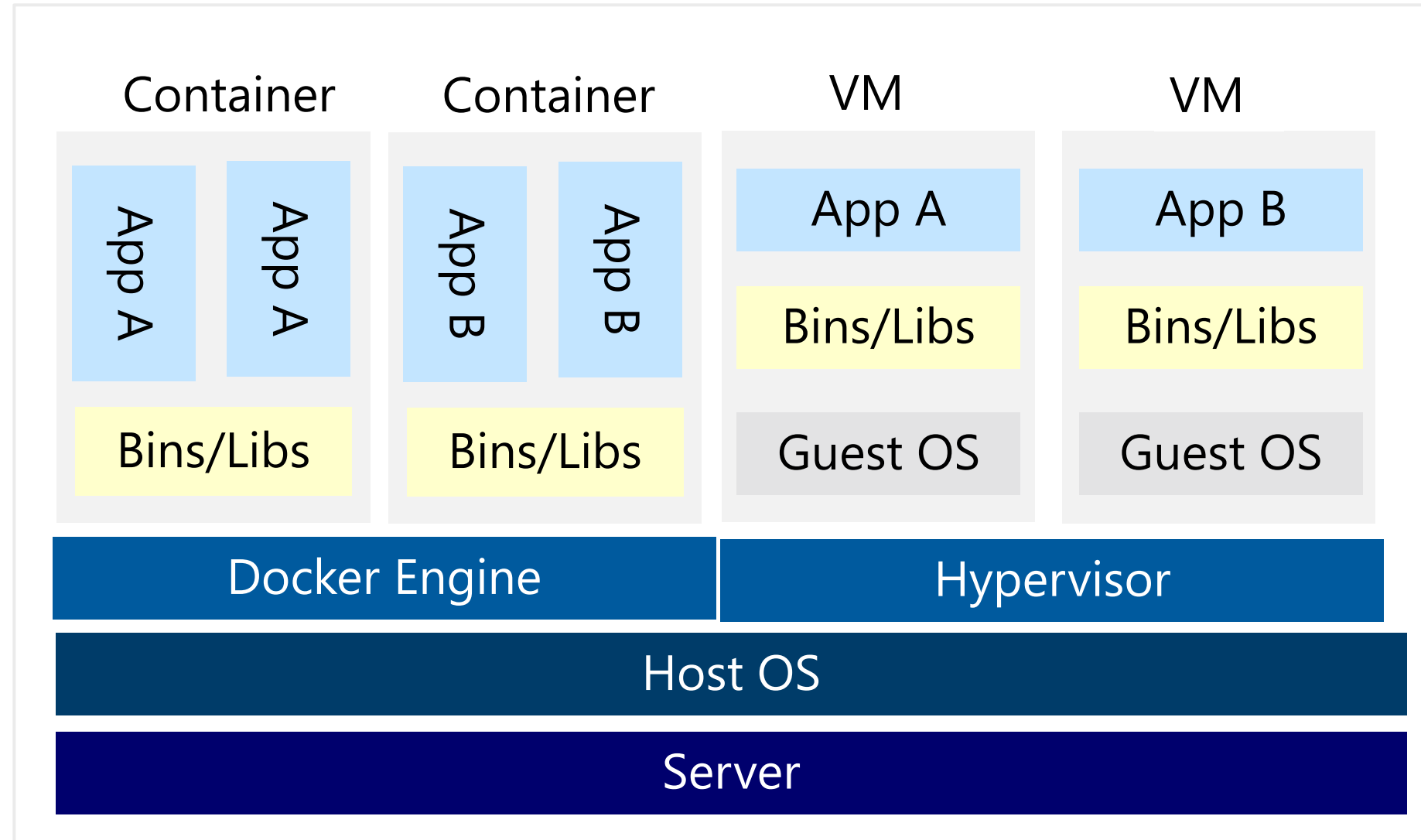
Demonstration – Configure Azure Container Apps



Summary and Resources

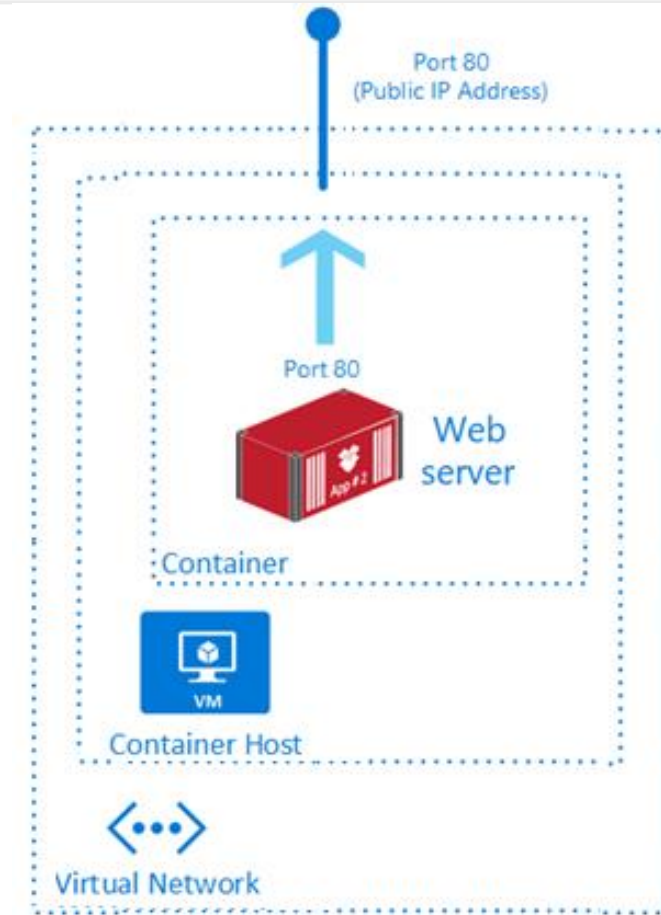
Compare Containers to Virtual Machines

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



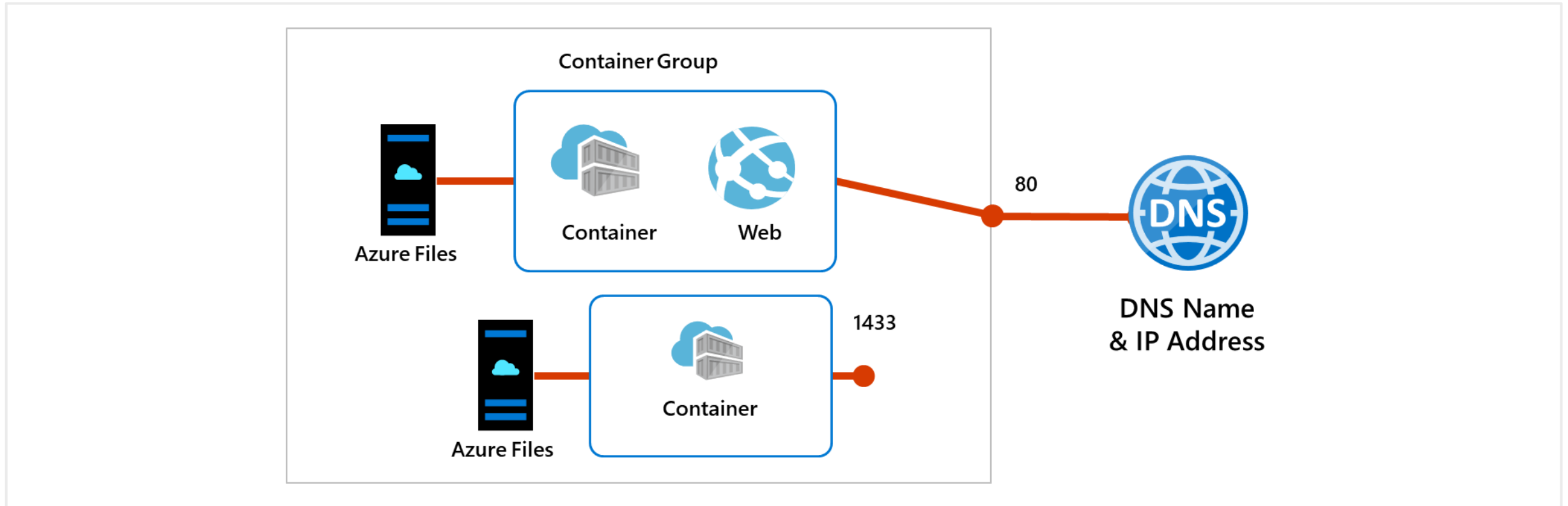
Explore Azure Container Instances Benefits

- 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

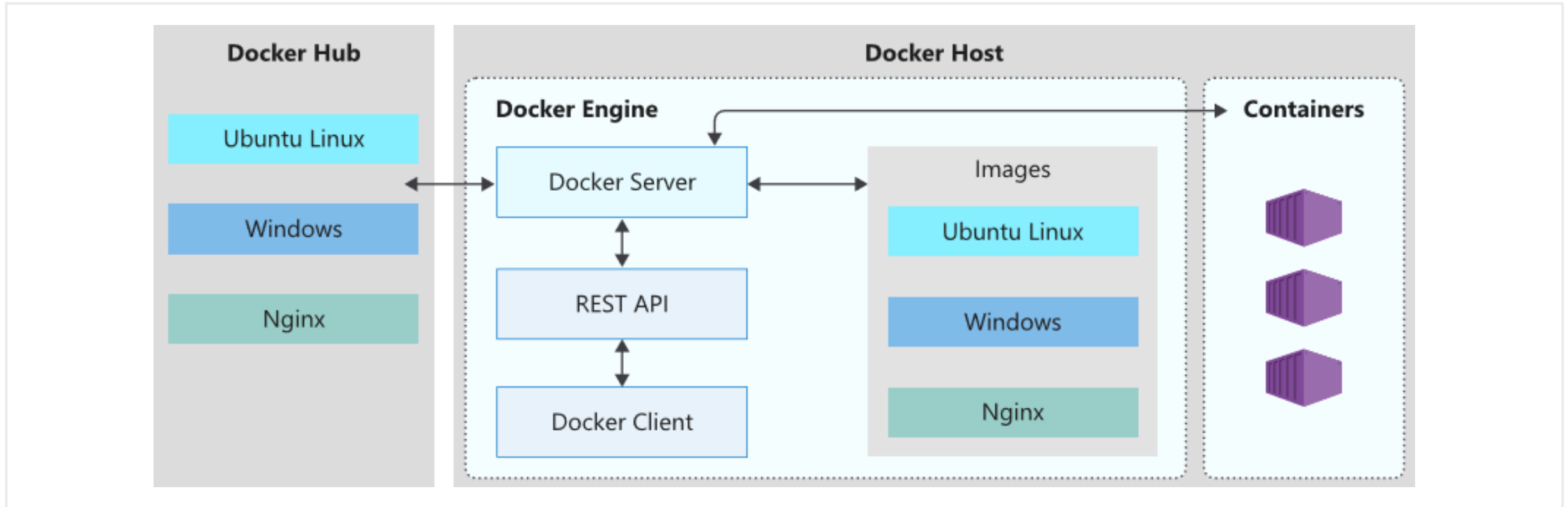


Top-level resource in Azure Container Instances

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 (optional)



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

Demonstration - Configure Azure Container Instances



Create and configure a container instance

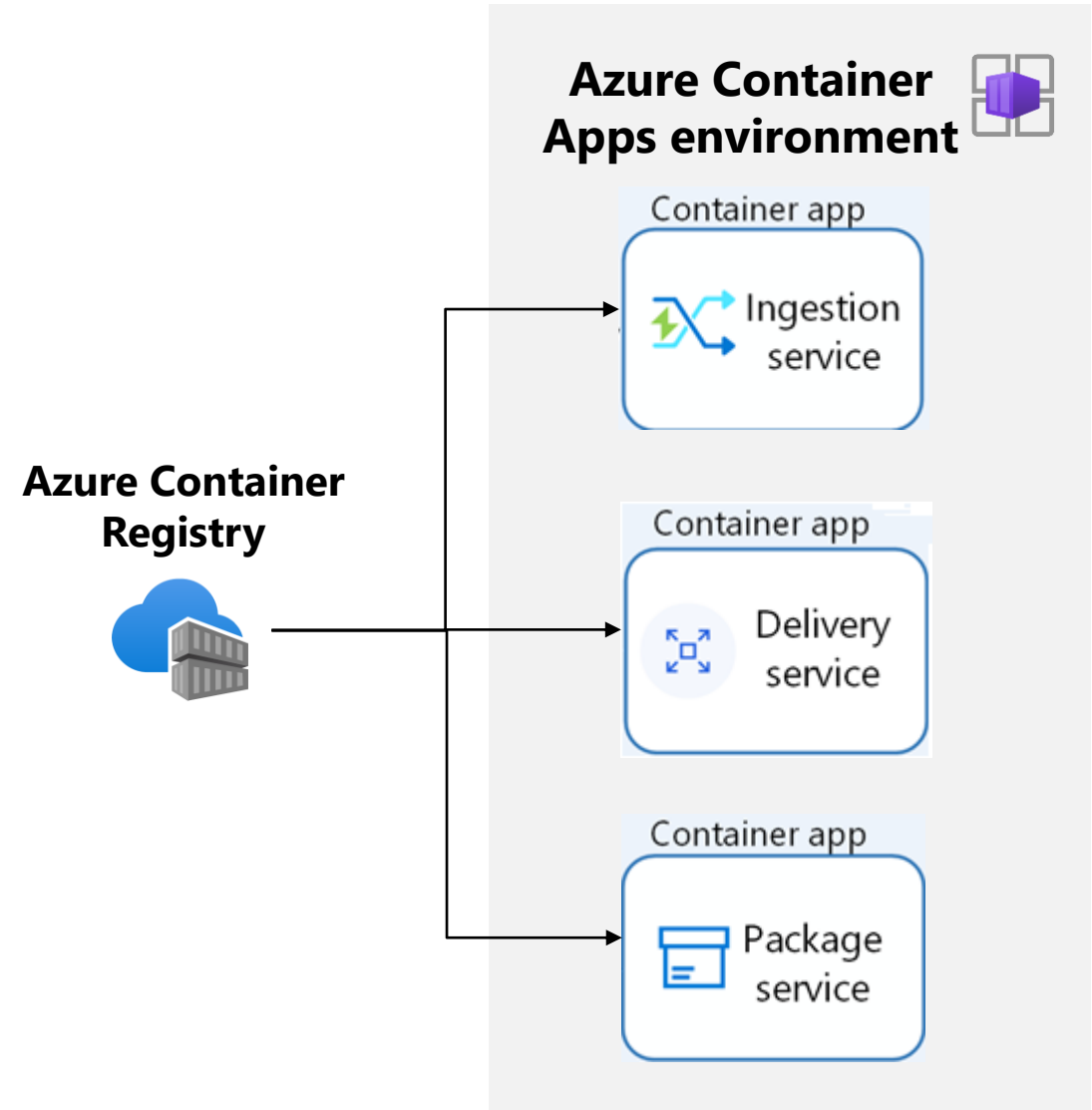


Verify deployment of the container instance

Manage Containers with Azure Container Apps (new)

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

Brendan Burns



Demonstration - Configure Azure Container Apps



Create and deploy a container app



Verify the application URL displays the welcome message

Summary and Resources – Configure Azure Container Instances

Knowledge Check Questions

Microsoft Learn Modules (docs.microsoft.com/Learn)



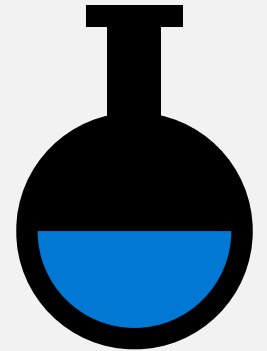
[Introduction to Docker containers](#)

[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 – Implement web apps

Lab scenario

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 the Azure web app

Next slide for an architecture diagram 

Lab 09a – Architecture diagram

Task 1



az104-09a-rg1

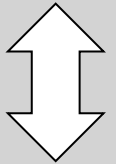


AppService



Production slot

Task 5



Swap the
staging slot

Task 2



Staging slot

Task 3



Local git

AppServiceplan

Task 6



Autoscale rule

php-docs-hello-world
code

Task 4



php-docs-hello-world
code



Lab 09b – Implement Azure Container Instances

Lab scenario

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:

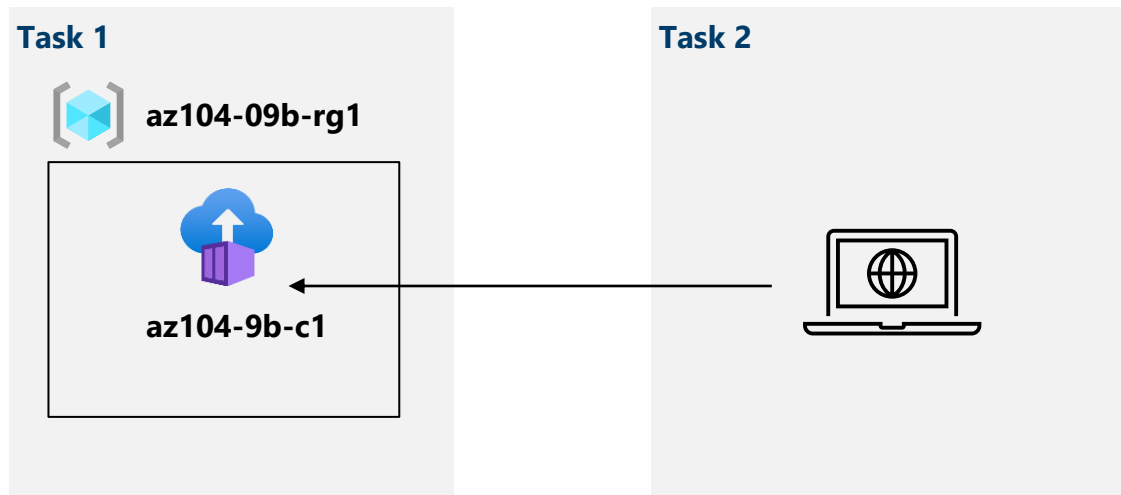
Deploy a Docker image by using the Azure Container Instance

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

Lab scenario

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

