Microsoft
Azure Administrator
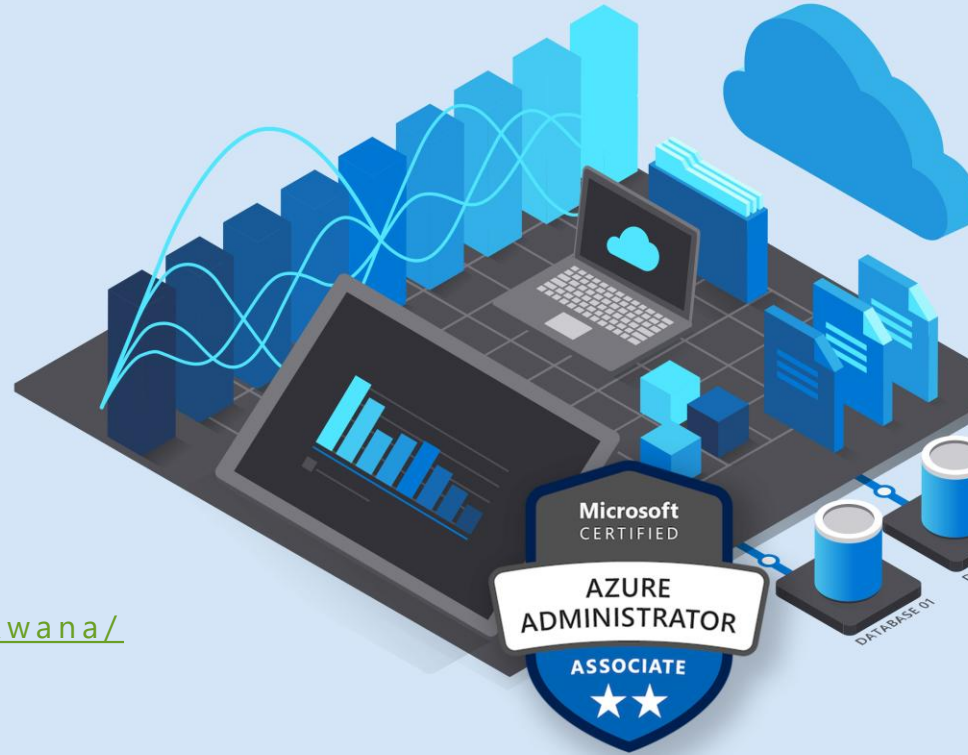
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12th June 2025

Configure Azure Files

Compare storage for file shares and blob data

Feature	Description	When to use
Azure Files	SMB interface, client libraries, and a REST interface that allows access from anywhere to stored files	• Lift and shift an application to the cloud • Store shared data across multiple virtual machines • Store development and debugging tools that need to be accessed from many virtual machines
Azure Blobs	Client libraries and a REST interface that allows unstructured data (flat namespace) to be stored and accessed at a massive scale in block blobs	• Support streaming and random-access scenarios • Access application data from anywhere

Manage File Shares

Windows – ensure port 445 is open

Linux – mount the drive

MacOS – mount the drive

Secure transfer required – SMB 3.0 encryption

Connect
publicwebsite

Windows   Linux   macOS

To connect to this Azure file share from Windows, choose from the following authentication methods and run the PowerShell commands from a normal (not elevated) PowerShell terminal:

Drive letter

Z

Authentication method

◯ Active Directory or Microsoft Entra

⦿ Storage account key

ⓘ Connecting to a share using the storage account key is only appropriate for admin access. Mounting the Azure file share with the Active Directory or Microsoft Entra identity of the user is preferred. Learn more

Show Script

Create File Share Snapshots

- Protection against application error and data corruption

- Protection against accidental deletions or unintended changes

- Support backup and recovery

- Incremental snapshot that captures the share state at a point in time

- Snapshot at the *file share level*, and restore at the *file level*

- Is read-only copy of your data

+ Add snapshot	⟳ Refresh	🗑 Delete	
Name		**Date created**	**Initiator**
☐ 2020-03-12T00:58:38.0000000Z		3/11/2020, 8:58:38 PM	-

Use Azure Storage Explorer

- Download and install

- Access multiple accounts and subscriptions

- Create, delete, view, edit storage resources

- View and edit Blob, Queue, Table, File, Cosmos DB storage and Data Lake Storage

- Obtain shared access signature (SAS) keys

- Available for Windows, Mac, and Linux
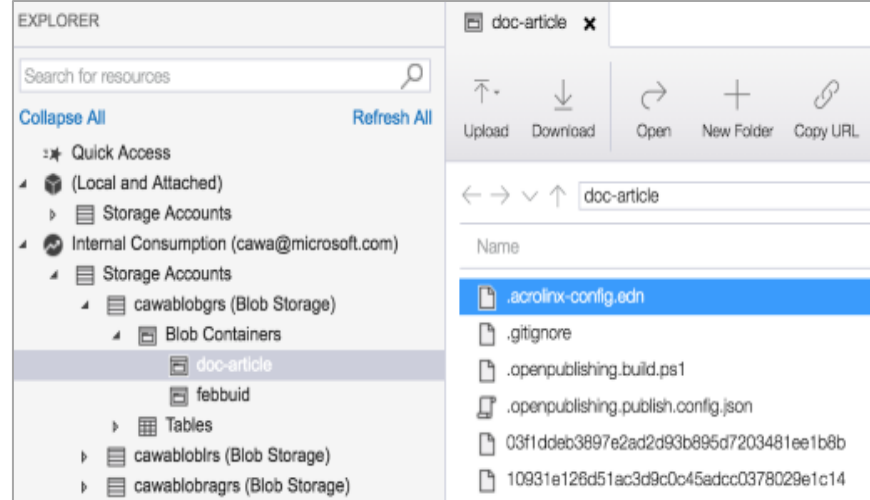
Also consider portal-based Azure Storage Browser and Azure Storage Mover

Introduction to Azure Virtual Machines

Review Cloud Services Responsibilities

Responsibility	SaaS	PaaS	IaaS	On-prem
Responsibility always retained by the customer				
Information and data	Customer	Customer	Customer	Customer
Devices (Mobile and PCs)	Customer	Customer	Customer	Customer
Accounts and identities	Customer	Customer	Customer	Customer
Responsibility varies by type				
Identity and directory infrastructure	Shared	Shared	Customer	Customer
Applications	Microsoft	Shared	Customer	Customer
Network controls	Microsoft	Shared	Customer	Customer
Operating system	Microsoft	Microsoft	Customer	Customer
Responsibility transfers to cloud provider				
Physical hosts	Microsoft	Microsoft	Microsoft	Customer
Physical network	Microsoft	Microsoft	Microsoft	Customer
Physical datacenter	Microsoft	Microsoft	Microsoft	Customer

Legend: ▨ Microsoft ▨ Customer ▨ Shared

Plan Virtual Machines

Start with the network

Name the virtual machine

Choose a location

- Each region has different hardware and service capabilities

- Locate Virtual Machines as close as possible to your users and to ensure compliance and legal obligations

Consider pricing

70+ Azure regions
Available in 140 countries

Determine Virtual Machine Sizing

| Type	Description
General purpose	Balanced CPU-to-memory ratio.
Compute optimized	High CPU-to-memory ratio.
Memory optimized	High memory-to-CPU ratio.
Storage optimized	High disk throughput and I/O.
GPU	Specialized virtual machines targeted for heavy graphic rendering and video editing.
High performance compute	Our fastest and most powerful CPU virtual machines

Determine Virtual Machine Storage

Each Azure VM has two or more disks:
- OS disk
- Temporary disk (not all SKUs have one, content can be lost)
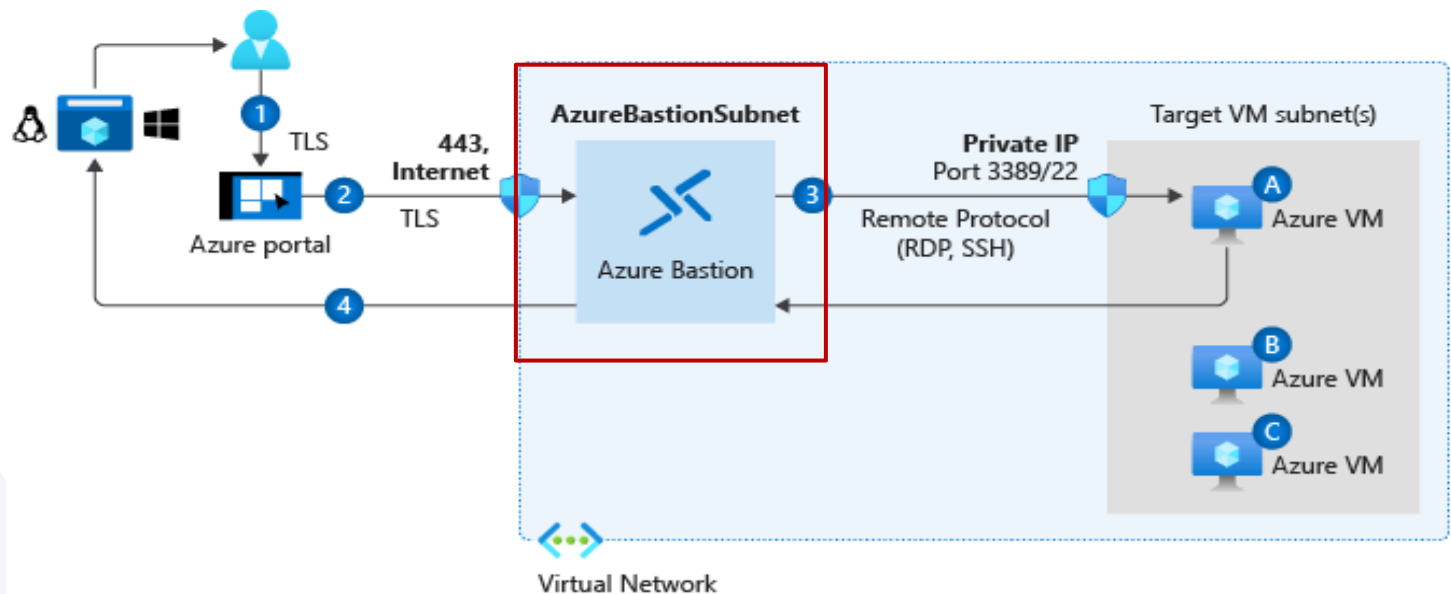- Data disks (optional)

OS and data disks reside in Azure Storage accounts:
- Azure-based storage service
- Standard (HDD, SSD) or Premium (SSD), or Ultra (SSD)

Azure VMs use managed disks

Azure VM (Windows)

C:\
OS disk

D:\
Temporary disk

F:\
Data disk

Azure blob
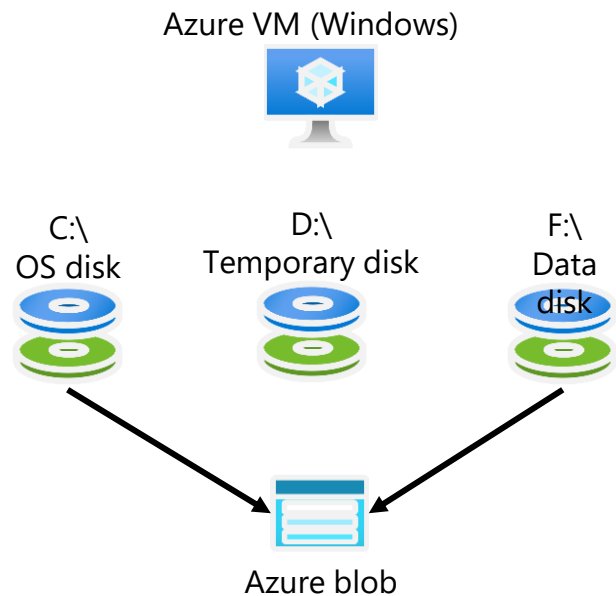
Connect to Virtual Machines

Bastion Subnet for RDP/SSH through the Portal over SSL

Remote Desktop Protocol for Windows-based Virtual Machines

Secure Shell Protocol for Linux based Virtual Machines

Configure Virtual Machine Availability

Plan for Maintenance and Downtime

Unplanned Hardware Maintenance	Unexpected Downtime	Planned Maintenance
When the platform predicts a failure, it will issue an unplanned hardware maintenance event Action: Live migration	Unexpected Downtime is when a virtual machine fails unexpectedly Action: Automatically migrate (heal)	Planned Maintenance events are periodic updates made to the Azure platform Action: No action

Setup Availability Sets

Instance details

Name * ⓘ
> avset01 ✓

Region * ⓘ
> (US) East US ⌄

Fault domains ⓘ
> [slider] 2

Update domains ⓘ
> [slider] 5

Use managed disks ⓘ
> No (Classic) | **Yes (Aligned)**

Two or more instances in Availability Sets = 99.95% SLA

| Configure multiple Virtual Machines in an Availability Set	Configure each application tier into separate Availability Sets	Combine a Load Balancer with Availability Sets	Use managed disks with the Virtual Machines

Review Update and Fault Domains

Update domains allows Azure to perform incremental or rolling upgrades across a deployment. During planned maintenance, only one update domain is rebooted at a time

Fault Domains are a group of Virtual Machines that share a common set of hardware, switches, that share a single point of failure. VMs in an availability set are placed in at least two fault domains
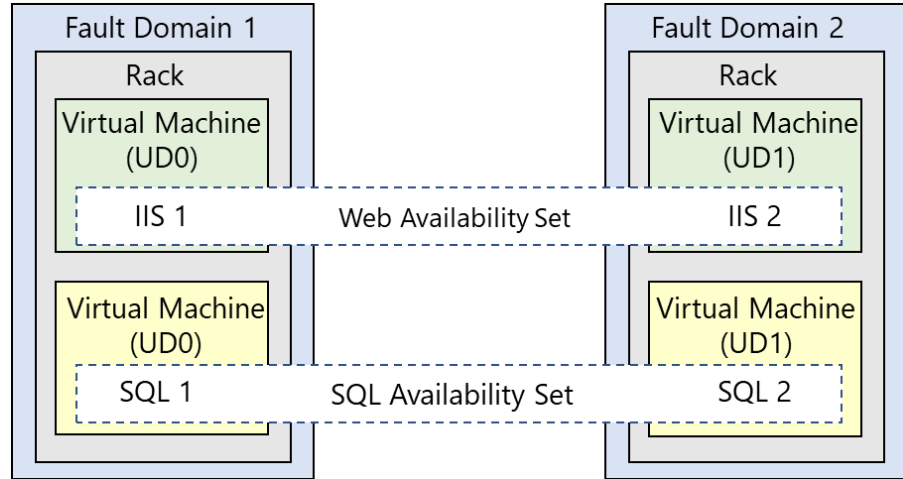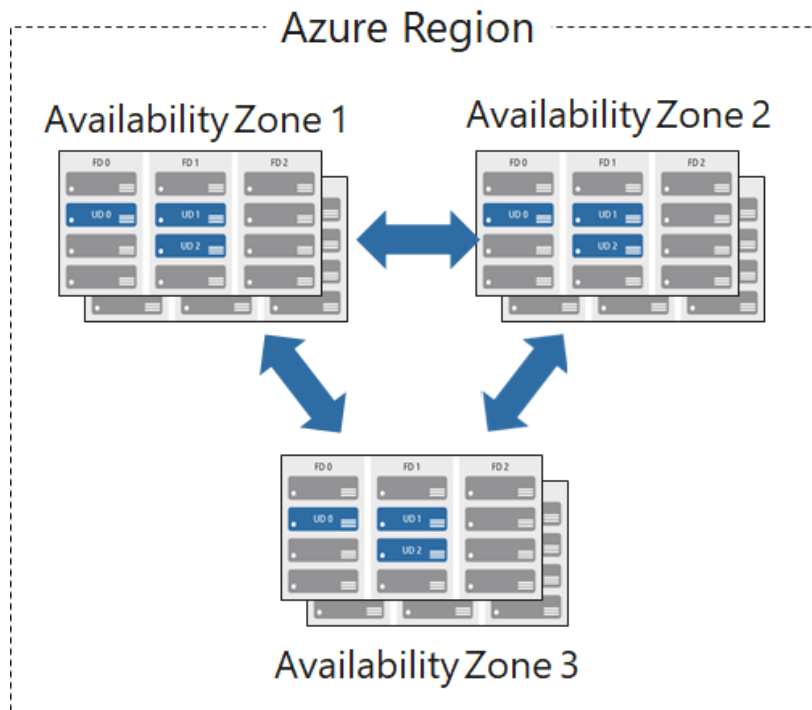
Review Availability Zones

Unique physical locations
in a region

Includes datacenters with independent
power, cooling, and networking

Protects from datacenter failures

Combines update and
fault domains

Provides 99.99% SLA

Compare Vertical to Horizontal Scaling

Vertical scaling

Horizontal scaling

Vertical scaling (scale up and scale down) is the process of increasing or decreasing power to a single instance of a workload; usually manual

Horizontal scaling (scale out and scale in) is the process of increasing or decreasing the number of instances of a workload; frequently automated

Create and configure scaling

Manually update or autoscale

Define a minimum, maximum, and default number of VM instances

Create more advanced scale sets with scale out and scale in parameters

Add a scaling condition ✕

Scale mode

○ **Manually update the capacity:** Scaling based on a CPU metric, on any schedule

● **Autoscaling:** Scaling based on a CPU metric, on any schedule

Default instance count * ⓘ

[   ]

Instance limit

Minimum * ⓘ   Maximum * ⓘ

[   ]   [   ]

Scale out

CPU threshold greater than * ⓘ   Increase instance count by * ⓘ

[   ]   [   ]

Scale in

CPU threshold less than * ⓘ   Decrease instance count by * ⓘ

[   ]   [   ]

Query duration

Minutes * ⓘ

[60   ]

The engine will query CPU usage for the past 60 minutes before executing the scaling to avoid reacting to transient spikes.
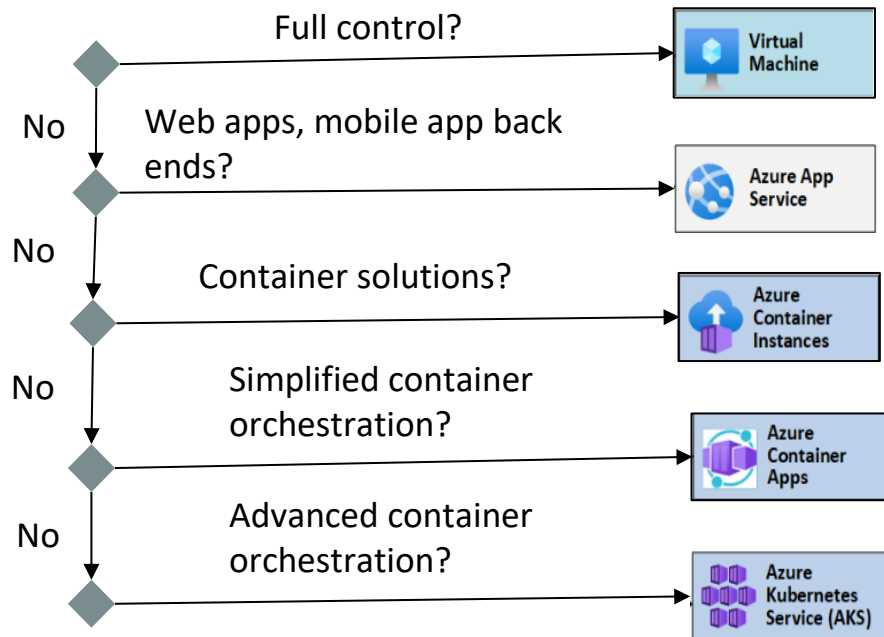
Schedule

Schedule type *

● Specify start/end dates

○ Repeat specific days

Administer PaaS Compute Options whiteboard

- 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.

Full control? → **Virtual Machine**

No

Web apps, mobile app back ends? → **Azure App Service**

No

Container solutions? → **Azure Container Instances**

No

Simplified container orchestration? → **Azure Container Apps**

No

Advanced container orchestration? → **Azure Kubernetes Service (AKS)**

Configure Azure App Service Plans

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

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

Settings sidebar:
- Diagnose and solve problems
- Apps
- File system storage
- Networking
- Scale up (App Service plan)
- Scale out (App Service plan)
- Resource explorer
- Properties

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

Settings	Choose how to scale your resource
Scale out (App Service plan)	**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*	2
Schedule	● Specify start/end dates ○ Repeat specific days
Timezone	(UTC-08:00) Pacific Time (US & Canada)
Start date	12/18/2022 · 12:00:00 AM
End date	12/18/2022 · 11:59:00 PM

| 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

🚀 QUICKSTART

ASP.NET

Python

Node.js

PHP

WordPress

Custom container

Java

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 *   Web App name.

                                                                      .azurewebsites.net

Publish *   ◉ Code   ○ Docker Container   ○ Static Web App

Runtime stack *   Select a runtime stack

Operating System   ◉ Linux   ○ Windows

Region *   East US
                      ⓘ Not finding your App Service Plan? Try a different region or select your
                      App Service Environment.

Pricing plans

Linux Plan (East US) * ⓘ   (New) ASP-ADSdemorg-a8f7
                           Create new

Pricing plan   Premium V3 P1V3 (195 minimum ACU/vCPU, 8 GB memory, 2 vCPU)
                      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

Developer 1

GitHub

Staging

Swap

Production

Developer 2
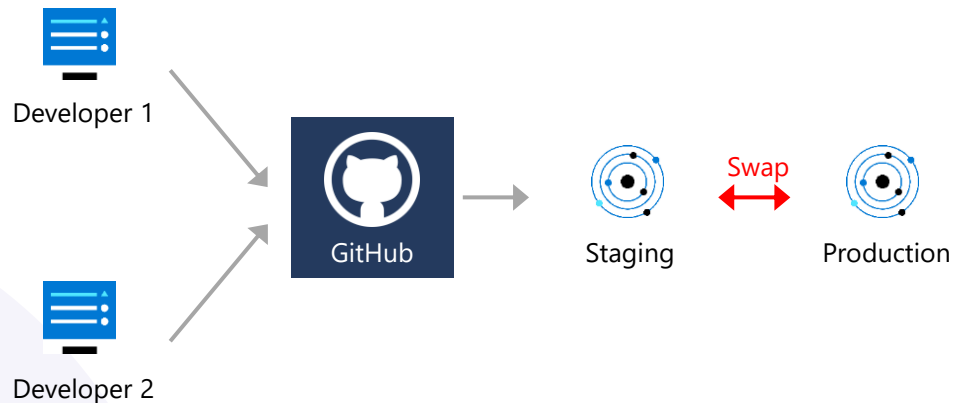
Service Plan	Slots
Free, Shared, Basic	0
Standard	Up to 5
Premium	Up to 20
Isolated	Up to 20

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

G 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
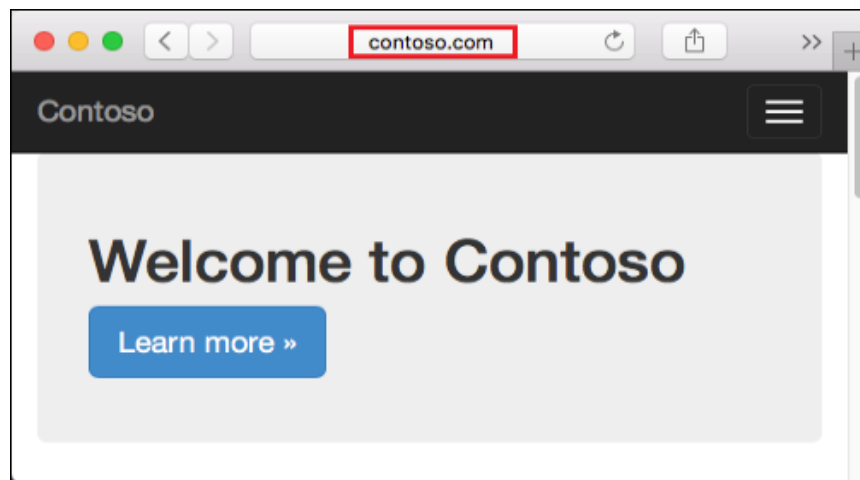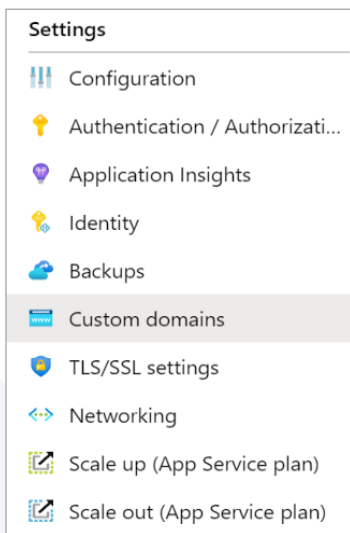
Redirect the default web app URL

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)