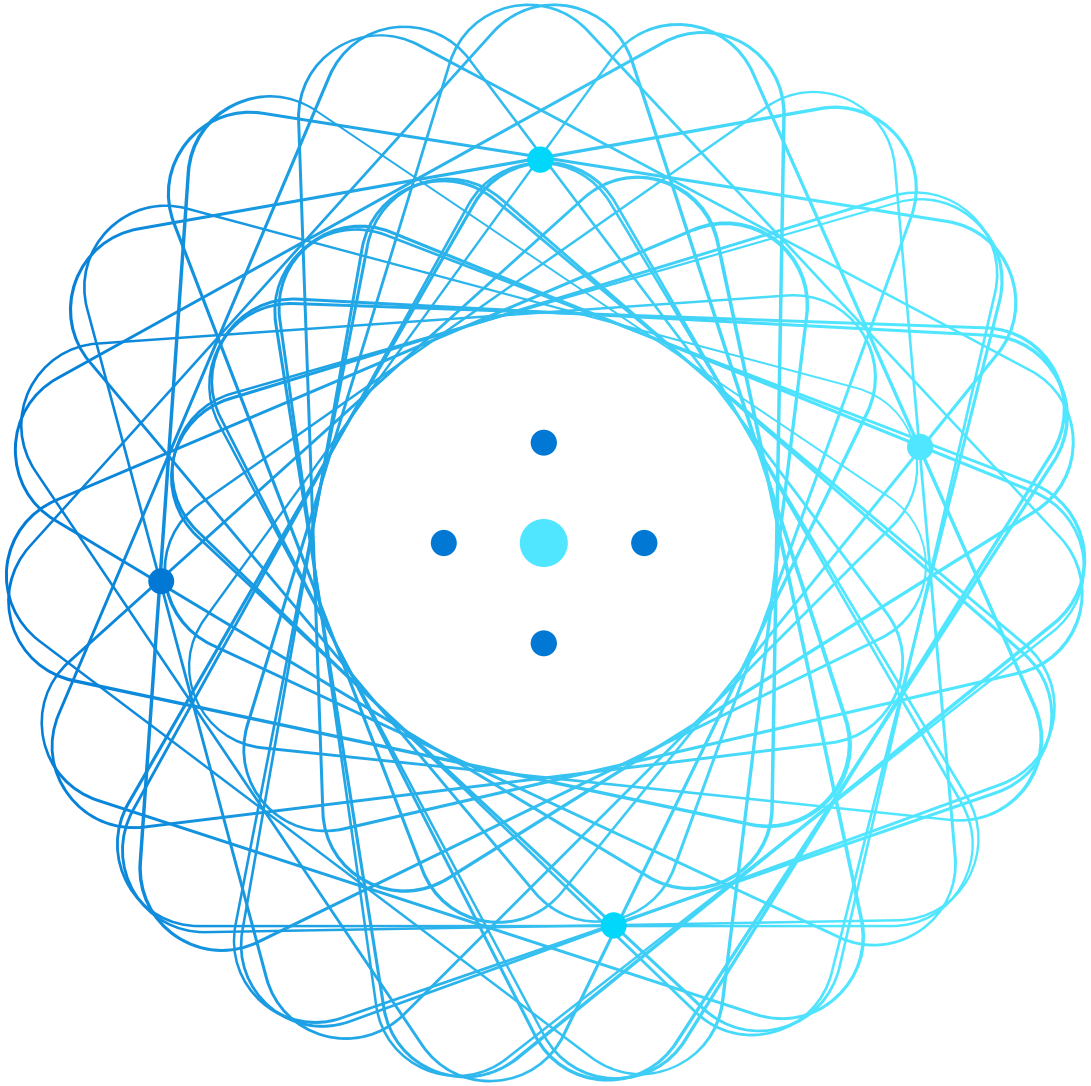
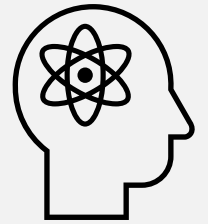
Microsoft Azure

AZ-900T0x Module 02: Core Azure Services



Module Outline

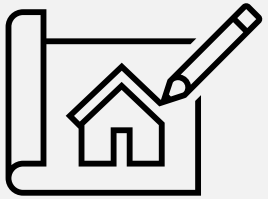


Module 02 – Outline

You will learn the following concepts:

- **Azure Architectural Components**
  - Regions and Availability Zones
  - Subscriptions and Resource Groups
- **Core Azure Resources**
  - Compute

Core Azure architectural components



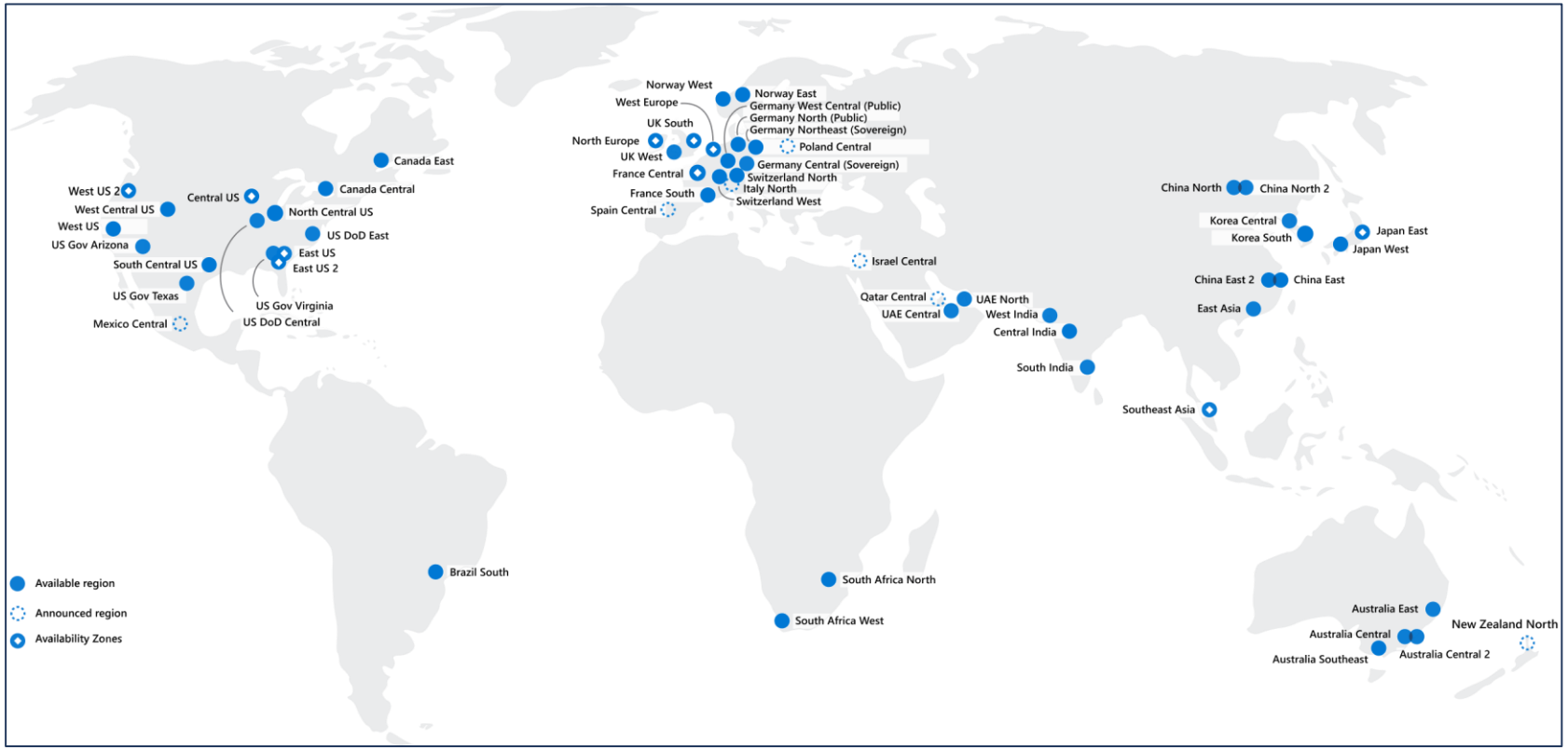
Core Azure architectural components – Objective Domain

Describe the benefits and usage of:

- Regions and Region Pairs
- Availability Zones
- Azure Resources
- Resource Groups
- Azure Resource Manager
- Subscriptions
- Azure Management Groups

Regions

Azure offers more global regions than any other cloud provider with 60+ regions representing over 140 countries



- Regions are made up of one or more datacenters in close proximity.
- Provide flexibility and scale to reduce customer latency.
- Preserve data residency with a comprehensive compliance offering.

Region Pairs

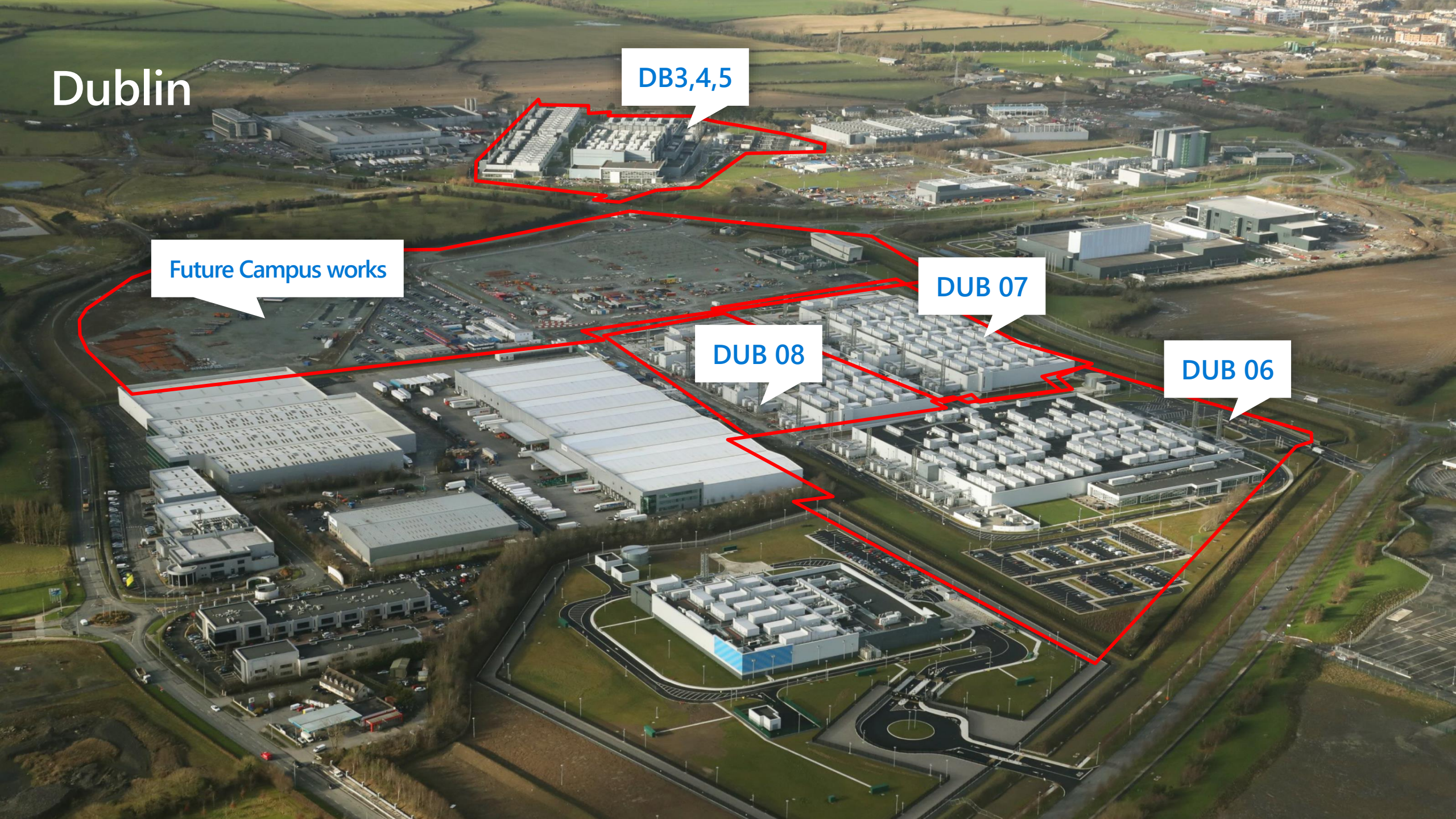
- At least 300 miles of separation between region pairs.
- Automatic replication for some services.
- Prioritized region recovery in the event of outage.
- Updates are rollout sequentially to minimize downtime.

Web Link: https://aka.ms/PairedRegions

Region	Region
North Central US	South Central US
East US	West US
West US 2	West Central US
US East 2	Central US
Canada Central	Canada East
North Europe	West Europe
UK West	UK South
Germany Central	Germany Northeast
South East Asia	East Asia
East China	North China
Japan East	Japan West
Australia Southeast	Australia East
India South	India Central
Brazil South (Primary)	South Central US

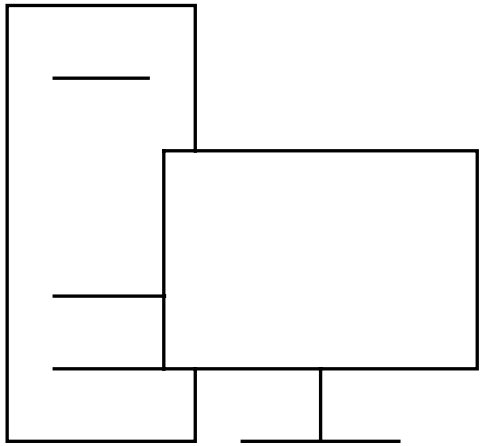

DB3
DB4


DB5
DB3
DB4


Dublin
DB3,4,5
Future Campus works
DUB 07
DUB 08
DUB 06

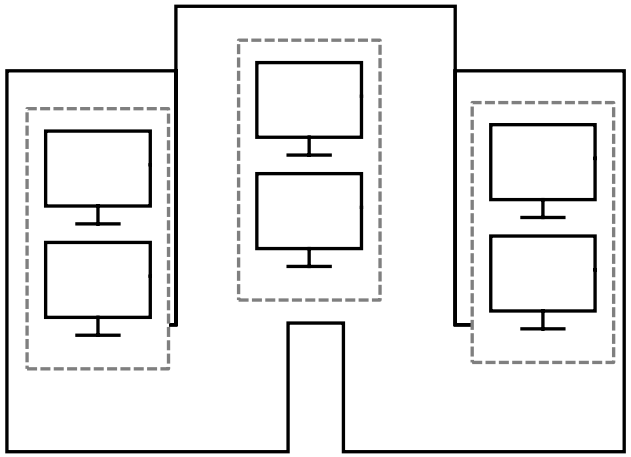
Availability Options

VM SLA
99.9% with Premium Storage



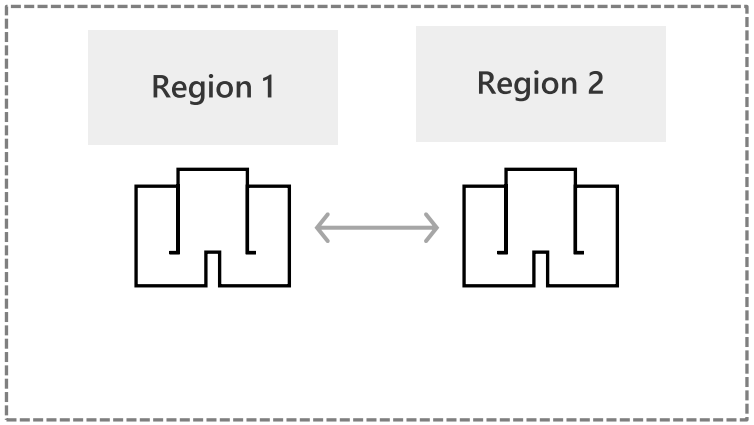
SINGLE VM
Easier lift and shift

VM SLA
99.99%



AVAILABILITY ZONES
Protection from entire datacenter failures

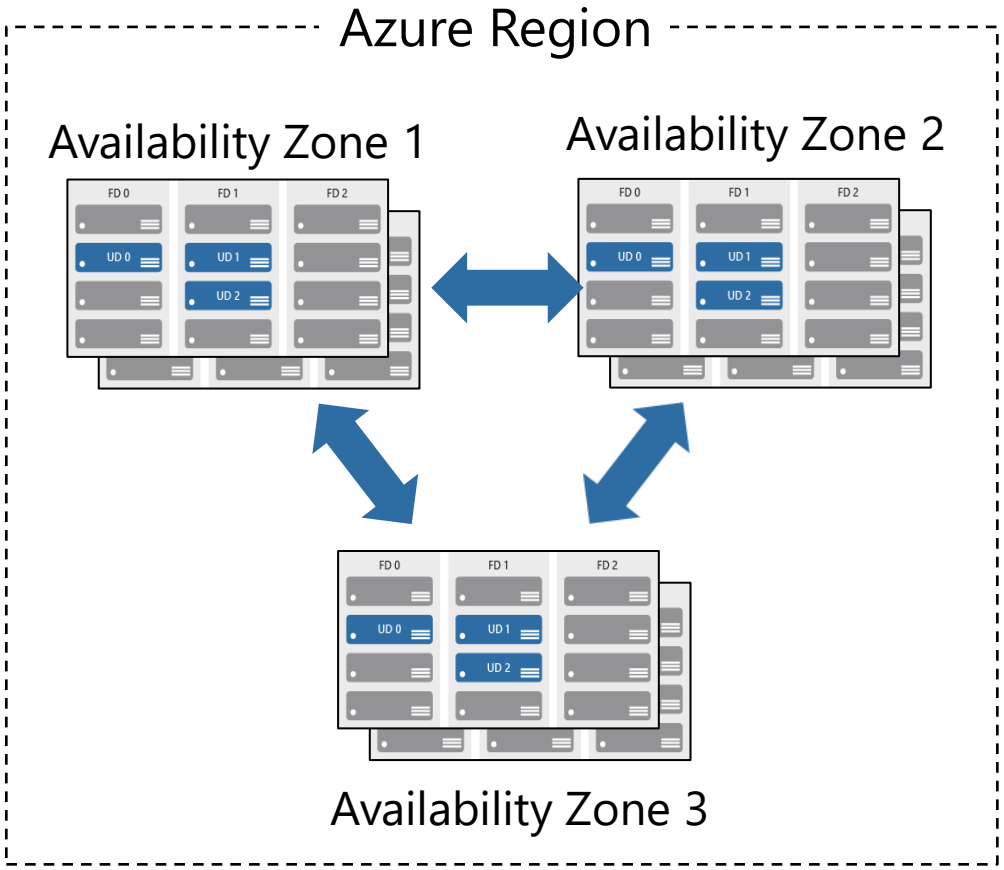
MULTI-REGION DISASTER RECOVERY



REGION PAIRS
Regional protection within Data Residency Boundaries

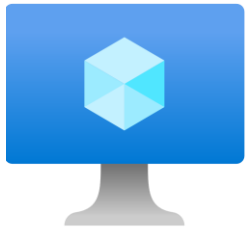
Availability zones

- Provide protection against downtime due to datacenter failure.
- Physically separate datacenters within the same region.
- Each datacenter is equipped with independent power, cooling, and networking.
- Connected through private fiber-optic networks.



Azure Resources

Azure **resources** are components like storage, virtual machines, and networks that are available to build cloud solutions.



Virtual Machines

Storage Accounts

Virtual Networks

App Services

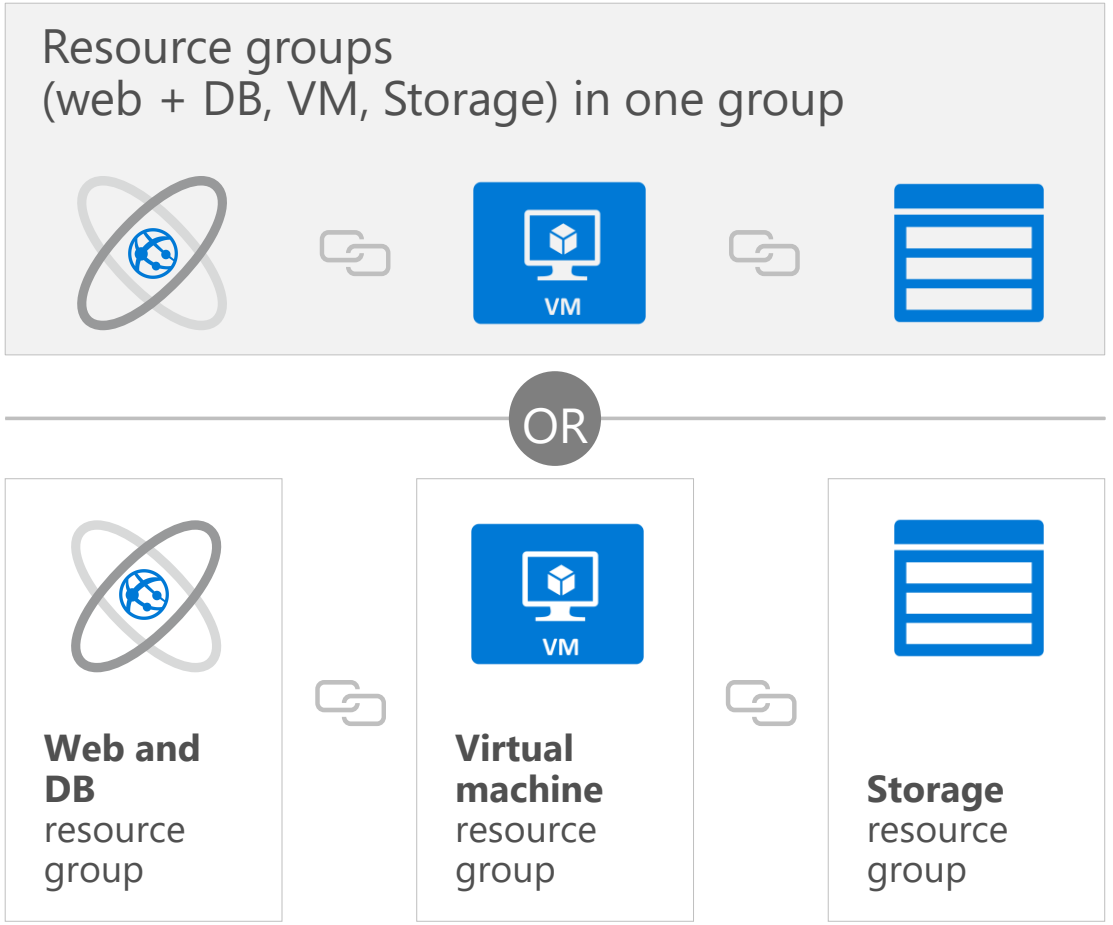
SQL Databases

Functions

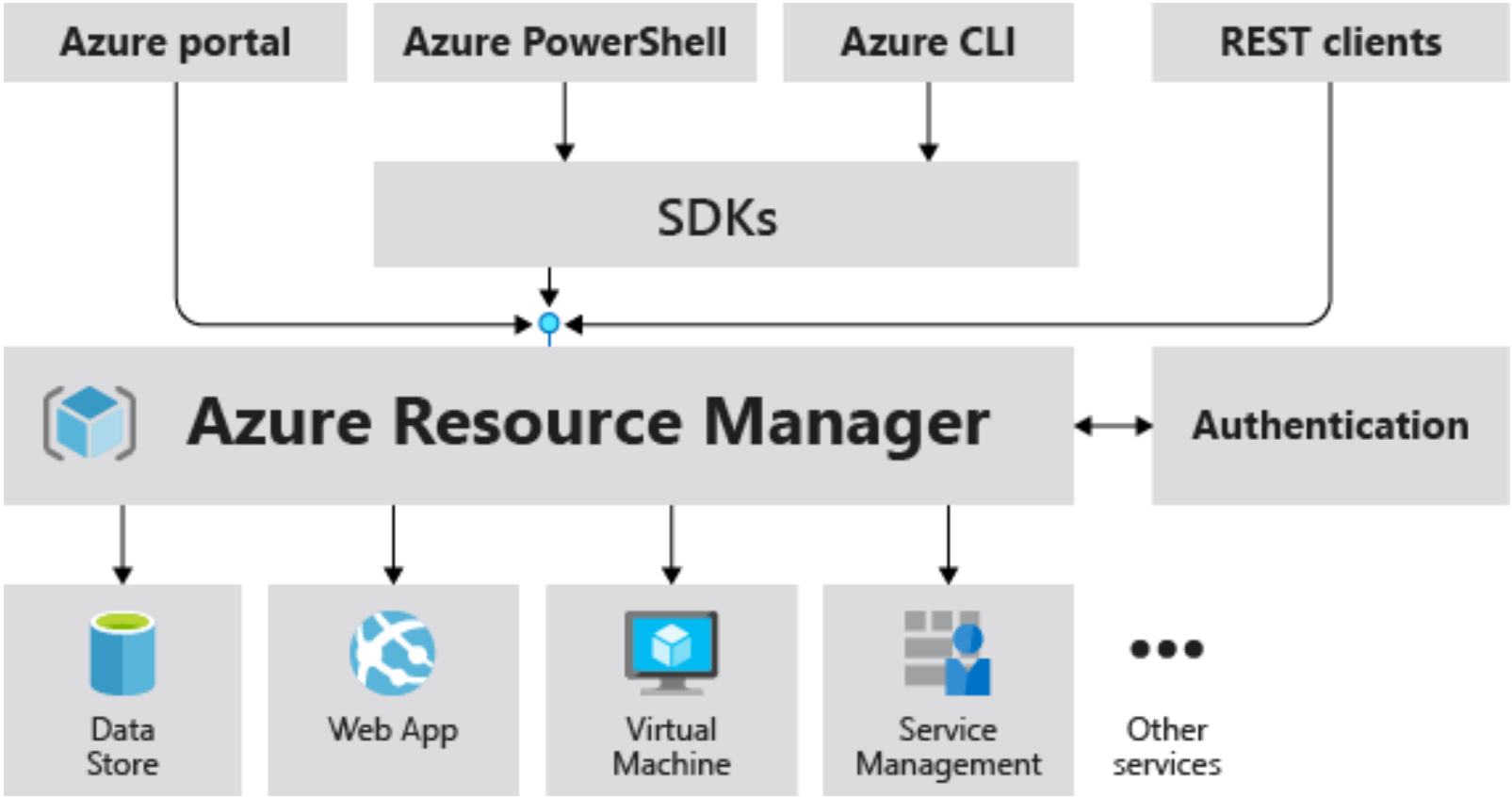
Resource groups

A **resource group** is a container to manage and aggregate resources in a single unit.

- Resources can exist in only one resource group.
- Resources can exist in different regions.
- Resources can be moved to different resource groups.
- Applications can utilize multiple resource groups.



Azure Resource Manager

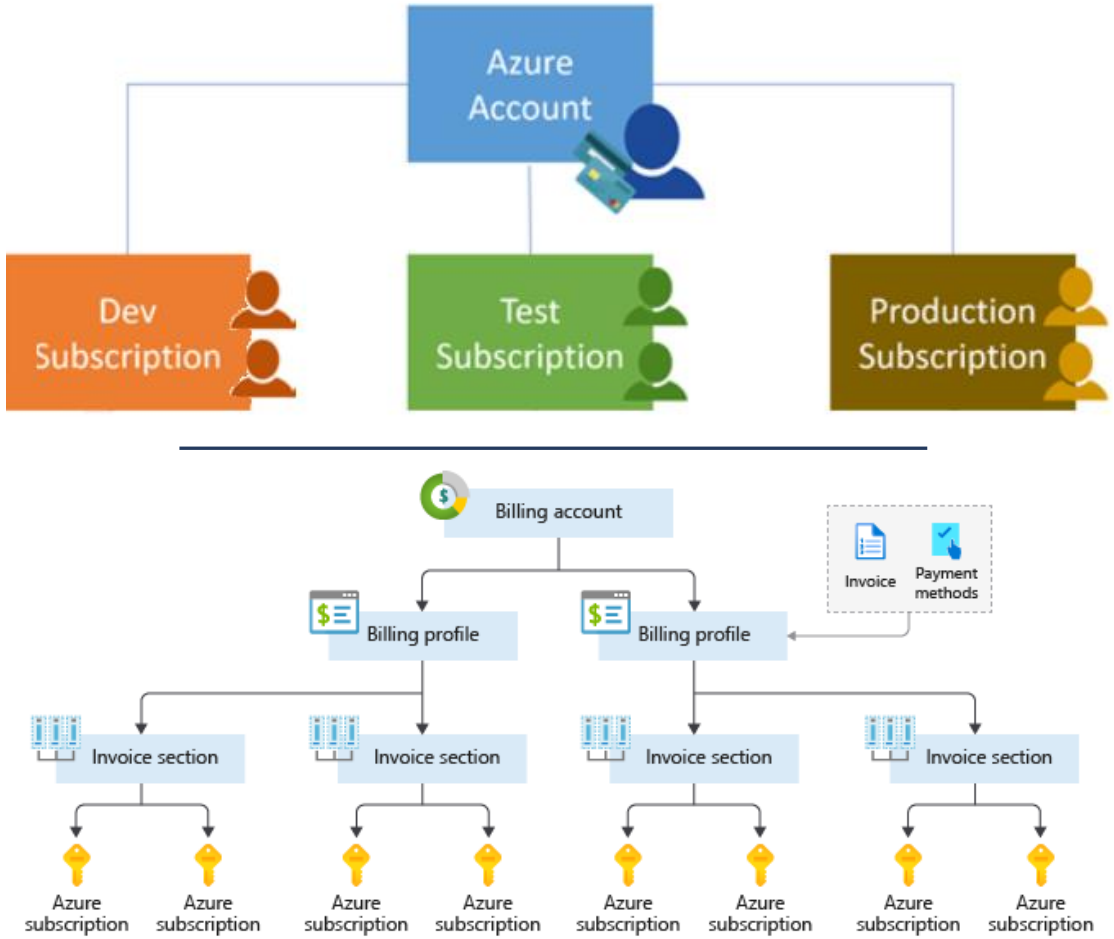


The **Azure Resource Manager (ARM)** provides a management layer that enables you to create, update, and delete resources in your Azure subscription.

Azure Subscriptions

An Azure subscription provides you with authenticated and authorized access to Azure accounts.

- **Billing boundary:** generate separate billing reports and invoices for each subscription.
- **Access control boundary:** manage and control access to the resources that users can provision with specific subscriptions.



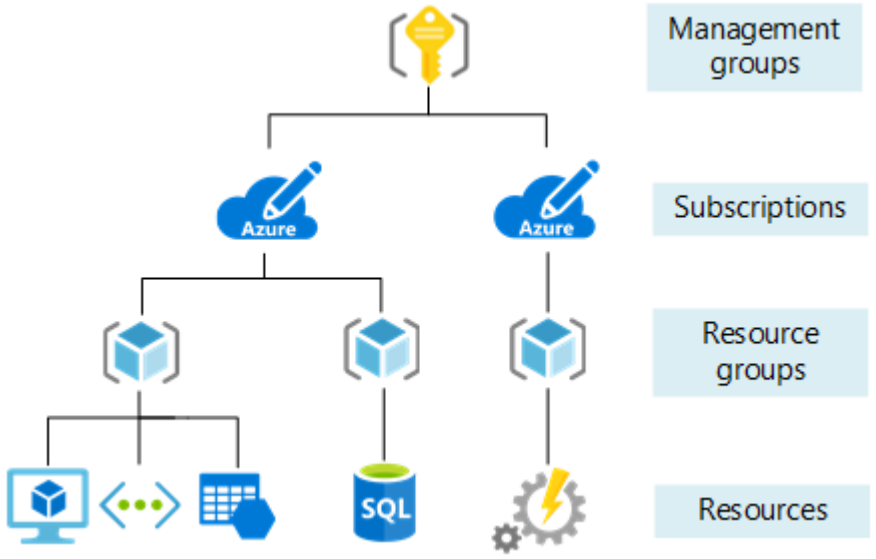
Walkthrough – Explore the Azure Portal

Launch the Azure Portal and have a look at the common components used everyday building cloud solutions

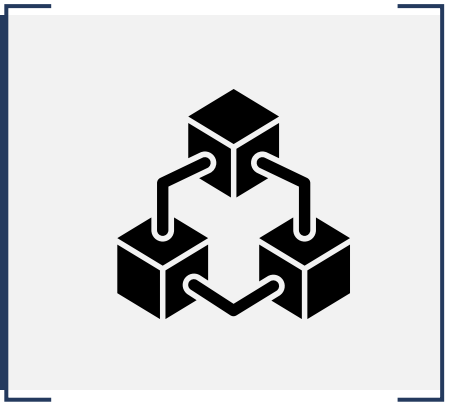
1. Connect to https://portal.azure.com
2. Explore the home screen.
3. Find “All Services” and see what is available.

Management Groups

- Management groups can include multiple Azure subscriptions.
- Subscriptions inherit conditions applied to the management group.
- 10,000 management groups can be supported in a single directory.
- A management group tree can support up to six levels of depth.



Core Azure workload products



Core Azure Workloads - Objective Domain

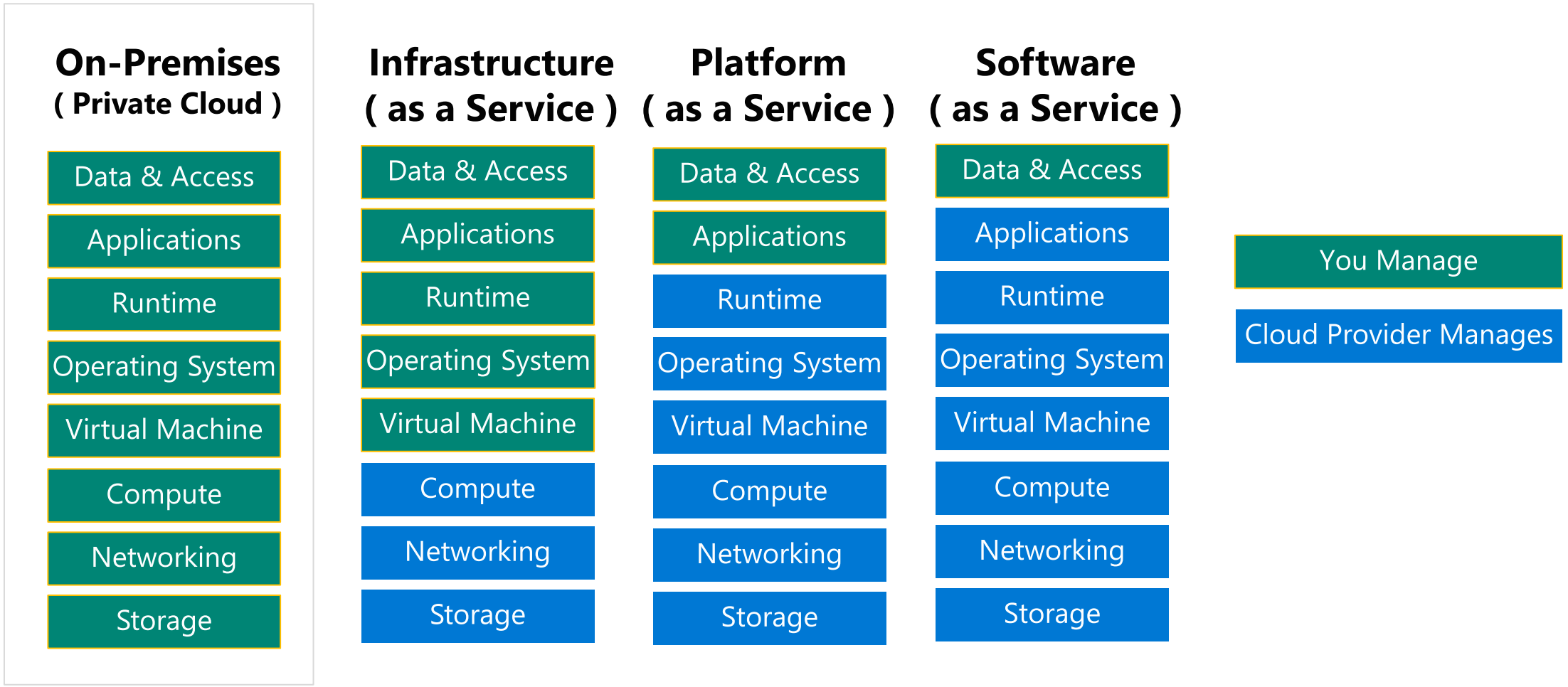
Describe the benefits and usage of:

- Virtual Machines, Azure App Services, Azure Container Instances (ACI), Azure Kubernetes Service (AKS), and Windows Virtual Desktop

Cloud service comparison

IaaS	PaaS	SaaS
The most flexible cloud service.	Focus on application development.	Pay-as-you-go pricing model.
You configure and manage the hardware for your application.	Platform management is handled by the cloud provider.	Users pay for the software they use on a subscription model.

Shared responsibility model

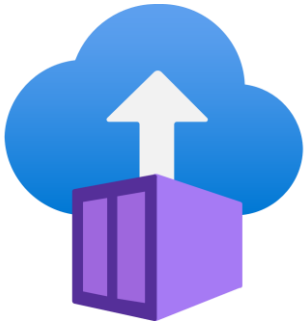


Azure compute services

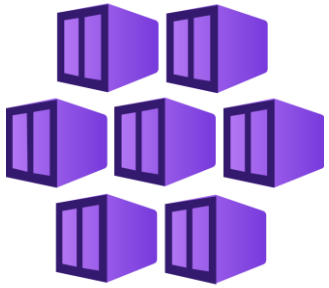
Azure **compute** is an on-demand computing service that provides computing resources such as disks, processors, memory, networking, and operating systems.

Virtual Machines

App Services



Container Instances



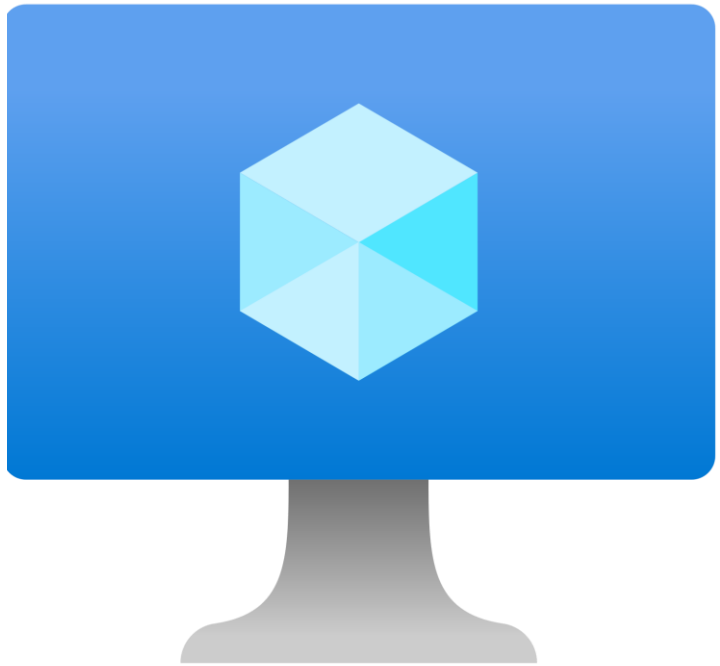
Azure Kubernetes Services (AKS)

Windows Virtual Desktop

Azure virtual machines

Azure **Virtual Machines (VM)** are software emulations of physical computers.

- Includes virtual processor, memory, storage, and networking.
- IaaS offering that provides total control and customization.



Walkthrough – Create a Virtual Machine

Create a virtual machine in the Azure Portal, connect to the virtual machine, install the web server role, and test.

1. Create the virtual machine.
2. Connect to the virtual machine.
3. Install the web server role and test.

Azure App Services

Azure **App Services** is a fully managed platform to build, deploy, and scale web apps and APIs quickly.

- Works with .NET, .NET Core, Node.js, Java, Python, or php.
- PaaS offering with enterprise-grade performance, security, and compliance requirements.

Azure Container Services

Azure **Containers** are a light-weight, virtualized environment that does not require operating system management, and can respond to changes on demand.

Azure Container Instances: a PaaS offering that runs a container in Azure without the need to manage a virtual machine or additional services.

Azure Kubernetes Service: an orchestration service for containers with distributed architectures and large volumes of containers.

Windows Virtual Desktop

Windows Virtual Desktop is a desktop and app virtualization that runs in the cloud.

- Create a full desktop virtualization environment without having to run additional gateway servers.
- Publish unlimited host pools to accommodate diverse workloads.
- Reduce costs with pooled, multi-session resources.

Serverless Computing

With **serverless computing applications**, the cloud service provider automatically provisions, scales, and manages the infrastructure required to run the code.

Azure Functions is code running your service and not the underlying platform or infrastructure. It creates infrastructure based on an event**.**

Additional ressources

- Microsoft online training: Explore Azure compute services - Learn | Microsoft Docs
- Public, private, hybrid cloud: AZ-900 Episode 6 | Public, Private & Hybrid cloud deployment models | Azure Fundamentals Course – YouTube
- Azure geographies,regions, zones, ...: AZ-900 Episode 7 | Geographies, Regions & Availability Zones | Microsoft Azure Fundamentals Course – YouTube
- Azure ressources, resource groups: AZ-900 Episode 8 | Resources, Resource Groups & Resource Manager | Azure Fundamentals Course – YouTube
- Azure compute services: AZ-900 Episode 9 | Compute Services | VMs, VM Scale Set, App Service, Functions, ACI, AKS | Azure - YouTube