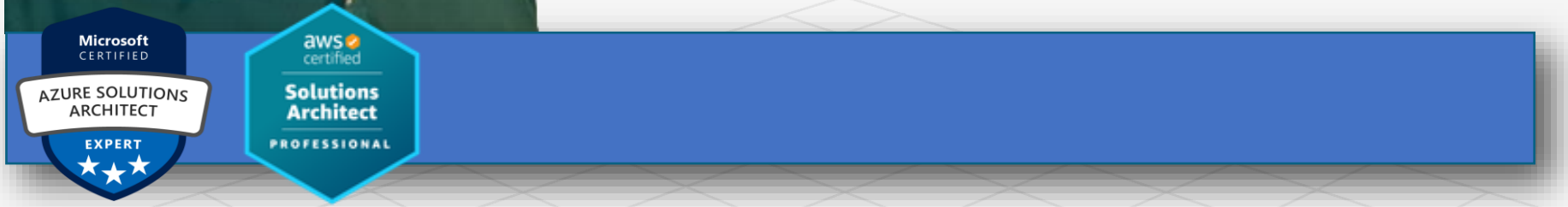
Azure Compute 102

Getting Started with Cloud Compute

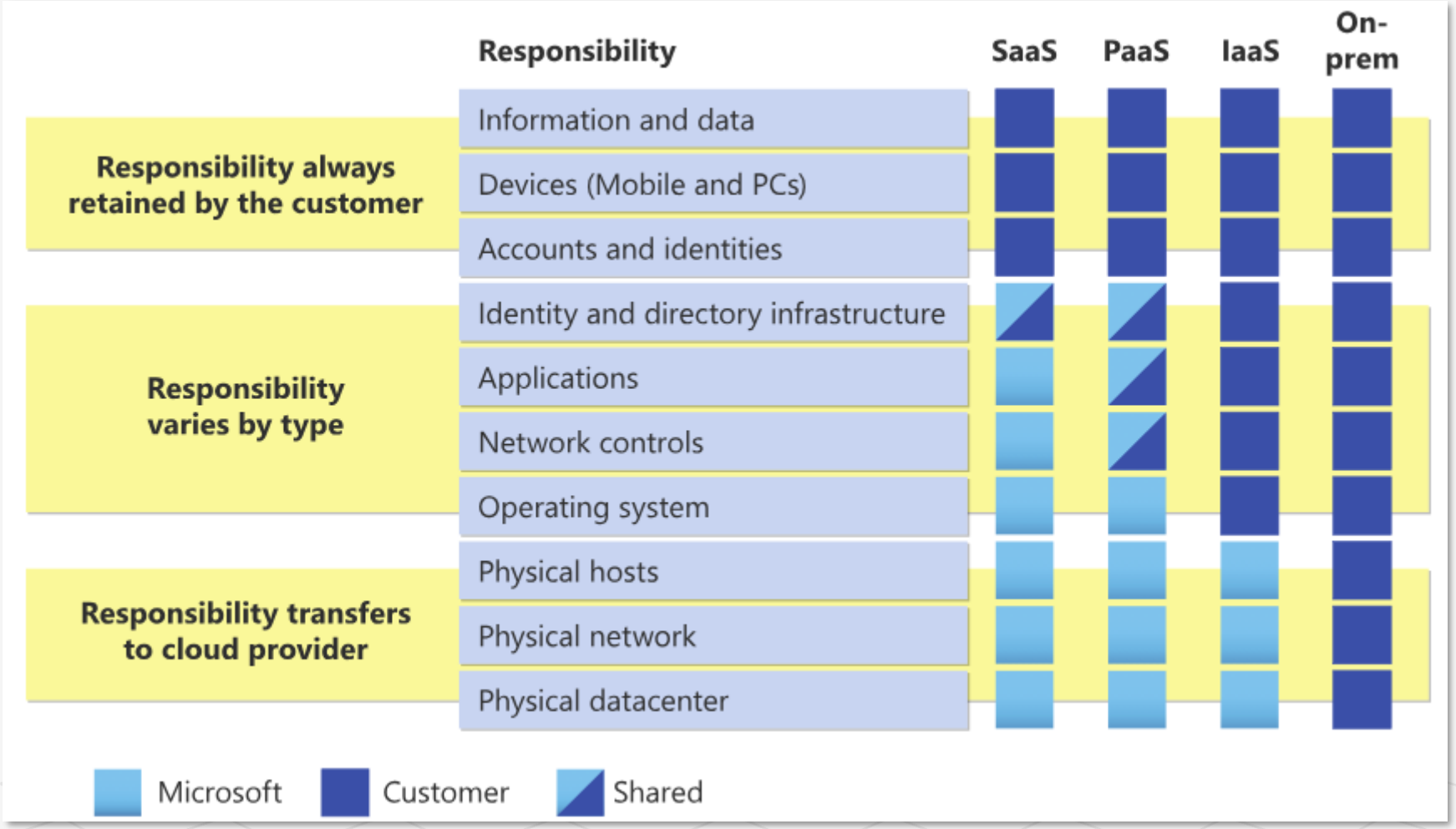
About me!



Daniel Colón

Azure Solutions Architect Expert, AWS Solutions Architect - Professional

Division of Responsibility



https://learn.microsoft.com/en-us/azure/security/fundamentals/shared-responsibility

Azure Fundamentals

- Storage
- Compute
- Network

Azure Compute

Collection of cloud-based services in **Microsoft Azure** that provide the infrastructure, tools, and resources for running applications and workloads

Benefits of Azure Compute

Scalability

Automatically scale resources based on demand

Cost Efficiency

Pay-as-you-go pricing and support for reservations

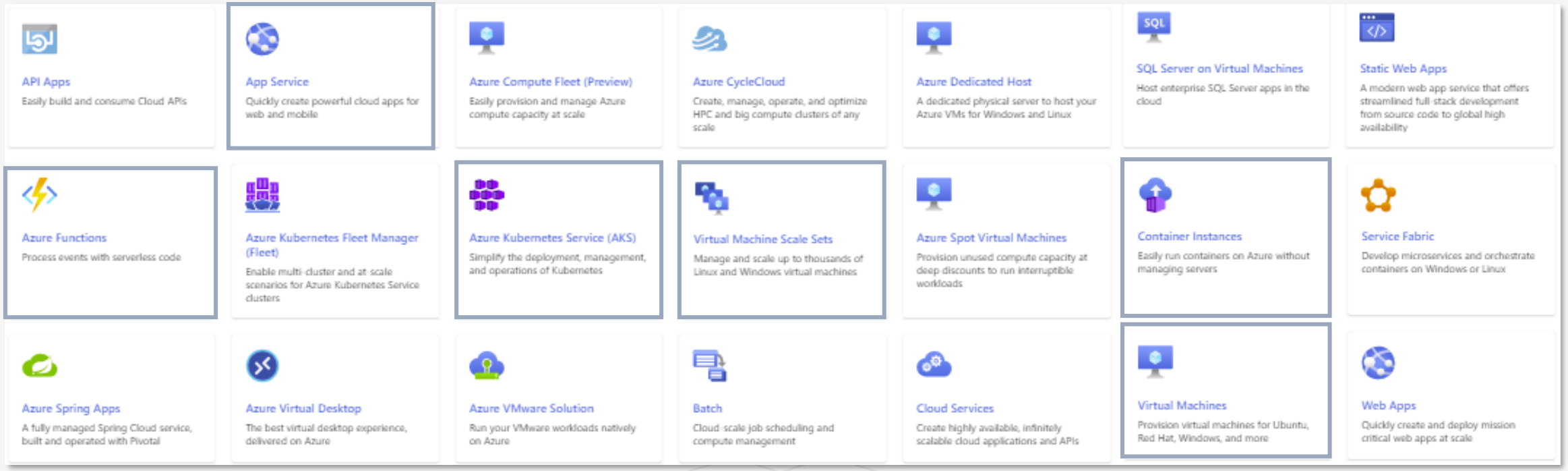
High Availability

Built-in redundancy and geographic distribution options

Security

Compliance with global standards and built-in security measures.

Azure Compute



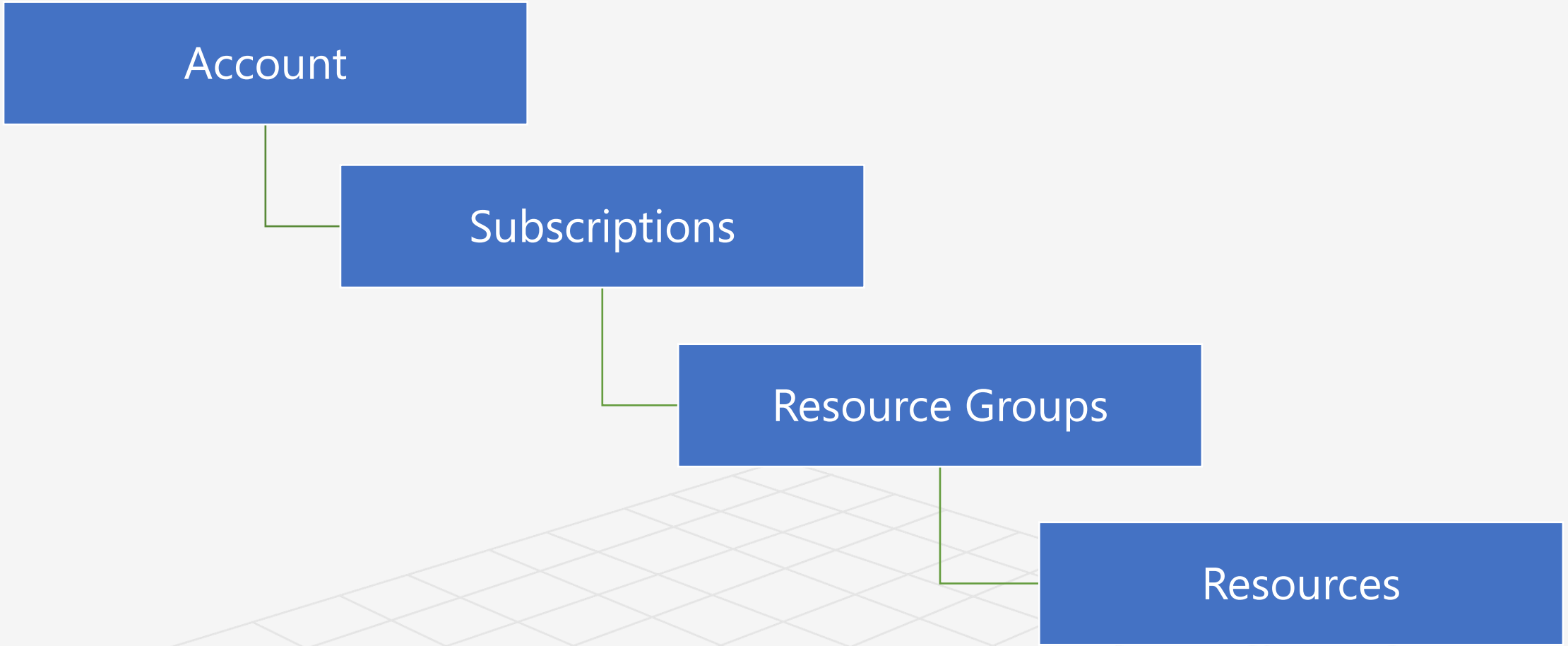
Resource Groups

Container that holds related resources for an Azure solution

Can include all the resources for the solution, or only those resources that you want to manage as a group

Best Practice to add resources that share the same lifecycle to the same resource group so you can easily deploy, update, and delete them as a group

Account, Subscriptions, Resource Groups



Resource Group

Resource group is a logical container for a group of resources

There is no cost associated with creating a resource group

Deleting a Resource Group deletes all resources within the Resource Group

Examples of Resources

Virtual Machine

Storage

Virtual Network

Network Interface

Virtual Hard Drive

Virtual Machines

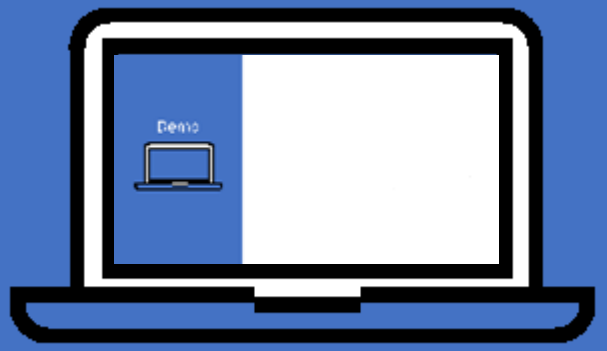
Scalable and customizable virtualized computing resources

Support for multiple operating systems (Windows, Linux)

Use cases:

- Legacy application migration
- Custom workloads
- Development/testing environments

Demo



Virtual Machines

https://learn.microsoft.com/en-us/azure/virtual-machines/

Virtual Machine Scale Sets

Deploy and manage a group of identical virtual machines (VMs)

Scale number of VMs based on demand or a defined schedule

High availability and load balancing across multiple VMs

Use cases:

- Hosting large-scale applications
- Scalable backend services for APIs, web apps, or mobile apps
- Big data processing and batch workloads

Virtual Machine Scale Sets vs VMs

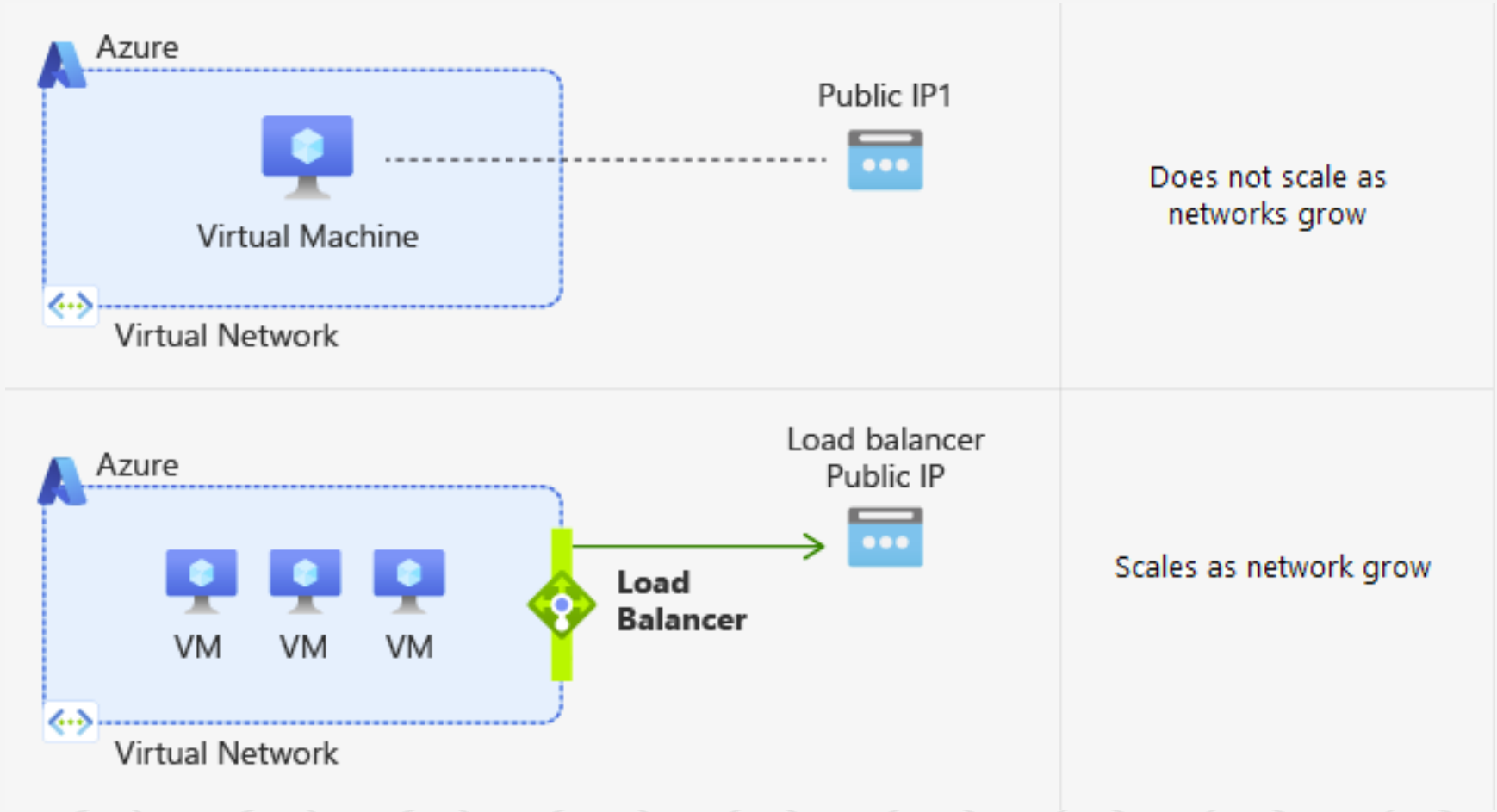
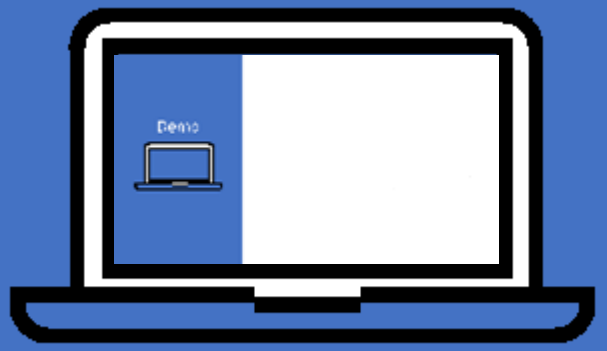


Image modified from Default outbound access in Azure - Azure Virtual Network | Microsoft Learn

Demo



VM Scale Sets

https://learn.microsoft.com/en-us/azure/virtual-machine-scale-sets/

Container Instances

Fast and simple way to run containers without managing virtual machines or requiring a complex orchestration framework

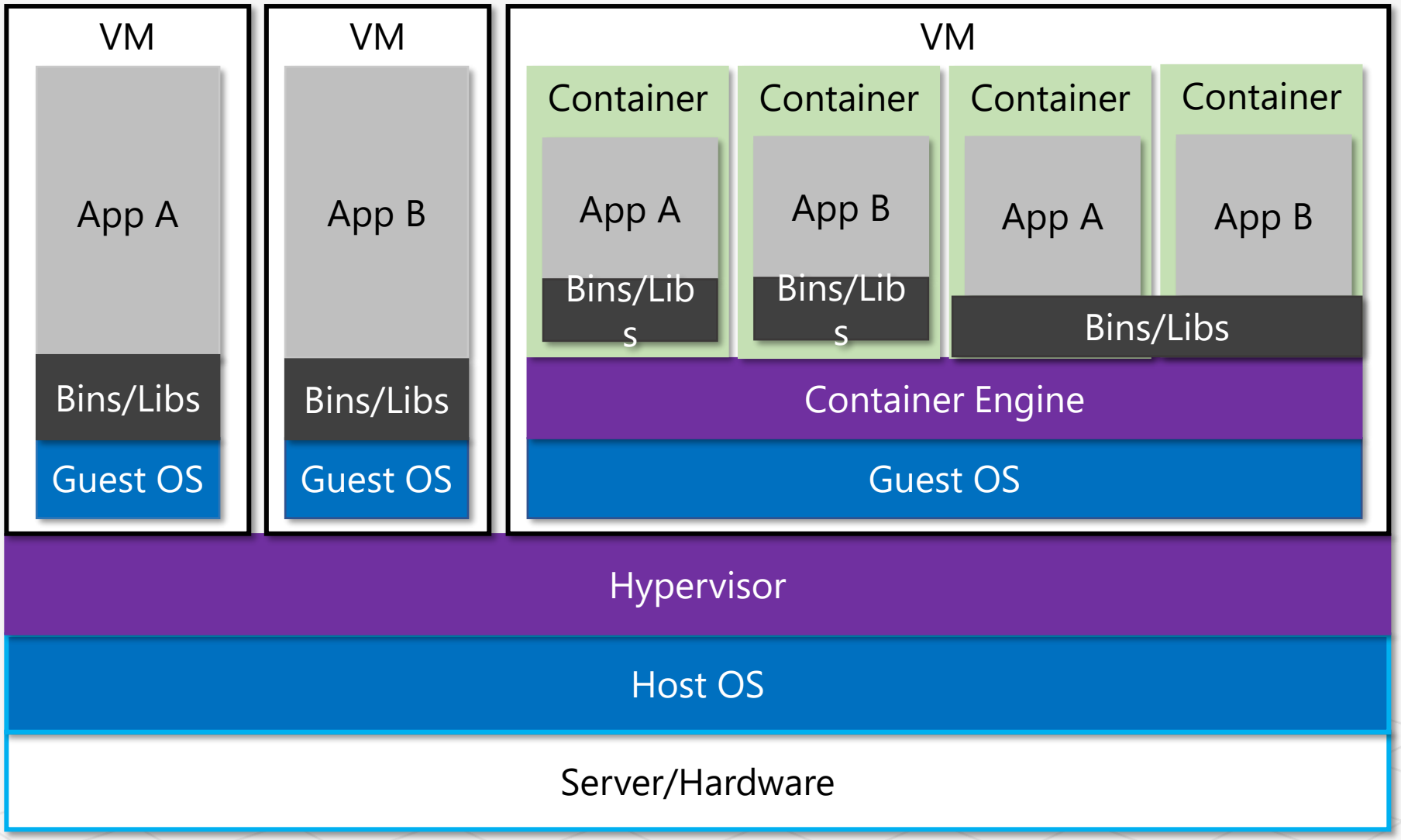
Supports Linux and Windows containers

Per-second billing and automatic scaling of resources

Use Cases:

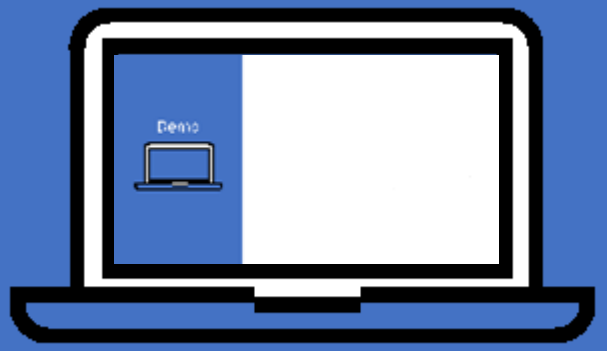
- Development and testing of containerized applications
- Running background jobs or event-driven tasks
- Proof of concept and short-lived workloads

Containers vs VMs



Containers Share OS
And where Appropriate Bins/Libs

Demo



Container Instances

https://learn.microsoft.com/en-us/azure/container-instances/

Kubernetes Services

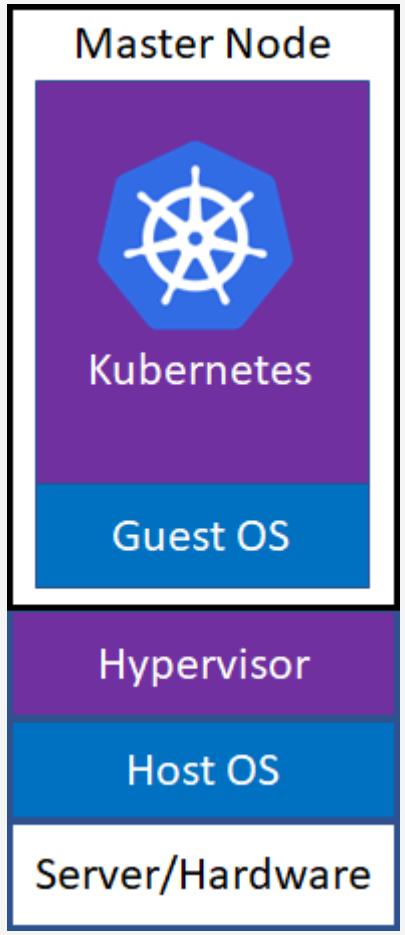
A managed container orchestration service

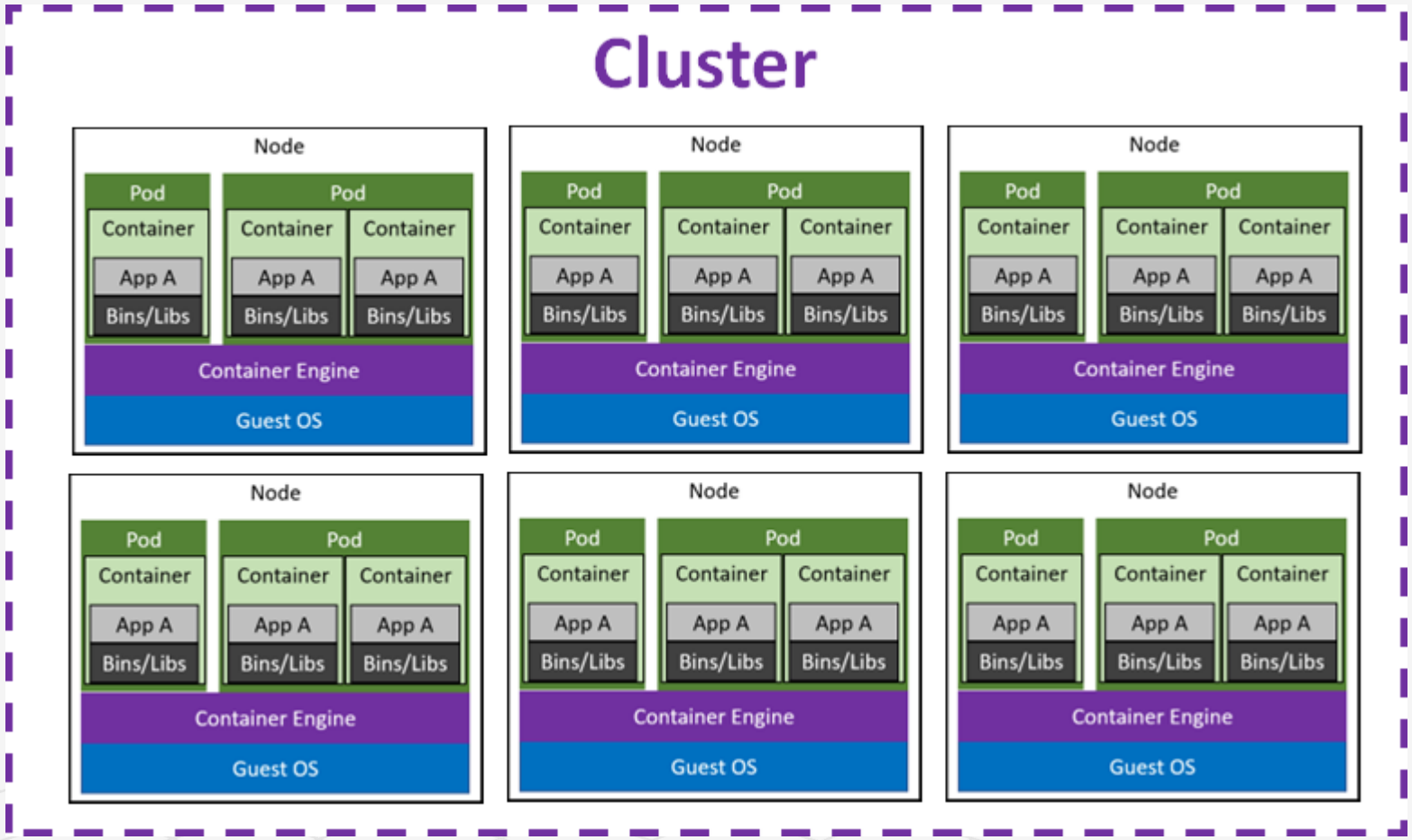
Simplifies deploying and managing containerized applications using Kubernetes

Use cases:

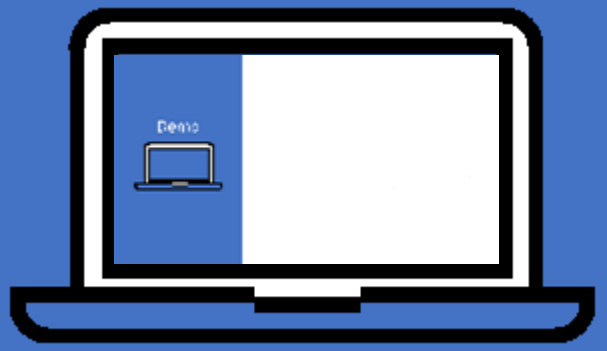
- Microservices architecture
- Containerized application hosting

Kubernetes


Master Node
Kubernetes
Guest OS
Hypervisor
Host OS
Server/Hardware


Cluster
Node
Pod
Container
App A
Bins/Libs
Container Engine
Guest OS

Demo



Kubernetes Services

https://learn.microsoft.com/en-us/azure/aks/

App Services

Managed platform for building, deploying, and scaling web apps, RESTful APIs, and mobile backends

Supports programming languages like .NET, Java, Python, Node.js, and PHP

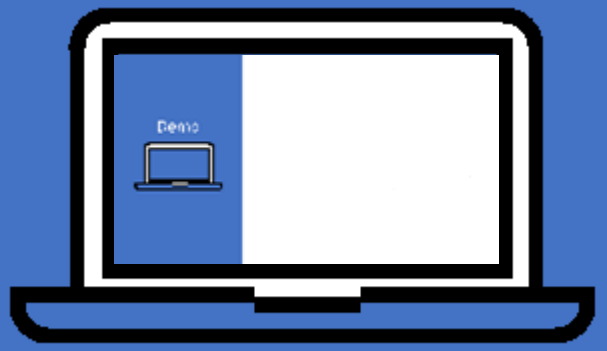
Use cases:

- Web application hosting
- API integration
- Mobile app backend services.

App Services vs VMs

App Services	VMs
PaaS Offering	IaaS Offering
Fully Managed	Full Control

Demo



App Services

https://learn.microsoft.com/en-us/azure/app-service/

Functions

A serverless compute option that runs code on-demand without managing infrastructure

Supports event-driven execution

Use cases:

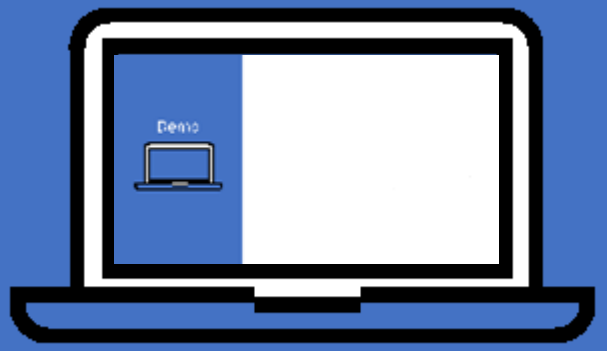
- Event processing
- Automation
- Lightweight application logic

Functions vs App Services

Feature	Azure Functions	Azure App Service
Architecture	Serverless	PaaS
Event-Driven	Yes	No
Use Cases	Lightweight APIs, background tasks, microservices	Web applications
Statefulness	Short-lived tasks	Stateful
Execution Time Limit	Yes	No
Cost	Pay per execution	Fixed higher cost

Table modified from Azure Functions vs Azure App Service: Choosing the Right Platform for Your Cloud Applications By Robert Dennyson

Demo



Functions

https://learn.microsoft.com/en-us/azure/azure-functions/

Summary

Overview of the core Azure Compute services

Virtual Machines

Customizable and scalable VMs for diverse workloads

Virtual Machine Scale Sets

Auto-scaling for groups of identical VMs

Container Instances

Run containers without managing infrastructure

Kubernetes Services

Orchestration for containerized applications

App Services

Managed platform for hosting web apps and APIs

Functions

Serverless computing for event-driven tasks

Resources

Azure Compute

https://learn.microsoft.com/en-us/azure/?product=compute

AZ-104: Deploy and manage Azure compute resources

https://learn.microsoft.com/en-us/training/paths/az-104-manage-compute-resources/

Link to Slides in GitHub

https://github.com/danielecolon/Azure-Compute-102

What's Next

Azure Storage 101:
Getting Started with Cloud Storage

Azure Compute 102:
Getting Started with Cloud Compute

Azure Networking 103:
Getting Started with Cloud Networking