

CLOUD .NET

NEW HAMPSHIRE



NASHUA

NEW HAMPSHIRE

Microsoft AWS Google

About me!



Nashua Cloud .NET User Group

<https://www.meetup.com/nashuaug/>

Daniel Colón

A+, Security+, Azure Solutions Architect Expert






The background of the slide is a photograph of a server room. Several tall, black server racks are visible, each filled with blue-lit components. The racks are arranged in rows, and the floor is a dark, reflective surface. The overall lighting is dim, with the primary light source being the blue glow from the servers.

Azure Compute 102

Getting Started with Cloud Compute

Division of Responsibility

	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

 Microsoft  Customer  Shared

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



API Apps

Easily build and consume Cloud APIs



App Service

Quickly create powerful cloud apps for web and mobile



Azure Compute Fleet (Preview)

Easily provision and manage Azure compute capacity at scale



Azure CycleCloud

Create, manage, operate, and optimize HPC and big compute clusters of any scale



Azure Dedicated Host

A dedicated physical server to host your Azure VMs for Windows and Linux



SQL Server on Virtual Machines

Host enterprise SQL Server apps in the cloud



Static Web Apps

A modern web app service that offers streamlined full-stack development from source code to global high availability



Azure Functions

Process events with serverless code



Azure Kubernetes Fleet Manager (Fleet)

Enable multi-cluster and at-scale scenarios for Azure Kubernetes Service clusters



Azure Kubernetes Service (AKS)

Simplify the deployment, management, and operations of Kubernetes



Virtual Machine Scale Sets

Manage and scale up to thousands of Linux and Windows virtual machines



Azure Spot Virtual Machines

Provision unused compute capacity at deep discounts to run interruptible workloads



Container Instances

Easily run containers on Azure without managing servers



Service Fabric

Develop microservices and orchestrate containers on Windows or Linux



Azure Spring Apps

A fully managed Spring Cloud service, built and operated with Pivotal



Azure Virtual Desktop

The best virtual desktop experience, delivered on Azure



Azure VMware Solution

Run your VMware workloads natively on Azure



Batch

Cloud-scale job scheduling and compute management



Cloud Services

Create highly available, infinitely scalable cloud applications and APIs



Virtual Machines

Provision virtual machines for Ubuntu, Red Hat, Windows, and more



Web Apps

Quickly create and deploy mission critical web apps at scale

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

Account

Subscriptions

Resource Groups

Resources

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:

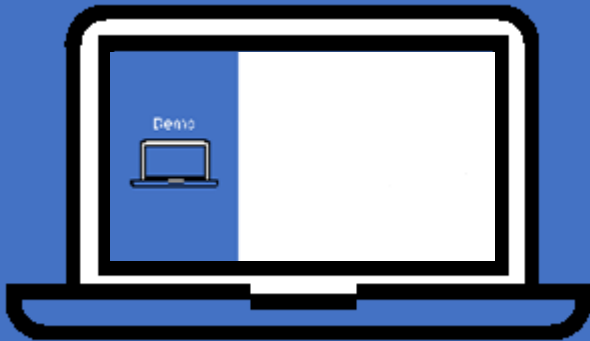
Legacy application migration

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

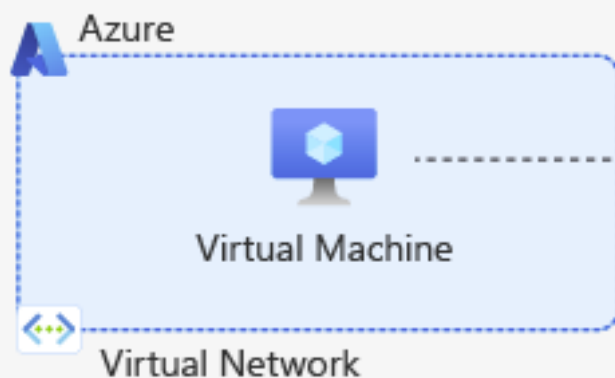
Use cases:

Hosting large-scale applications

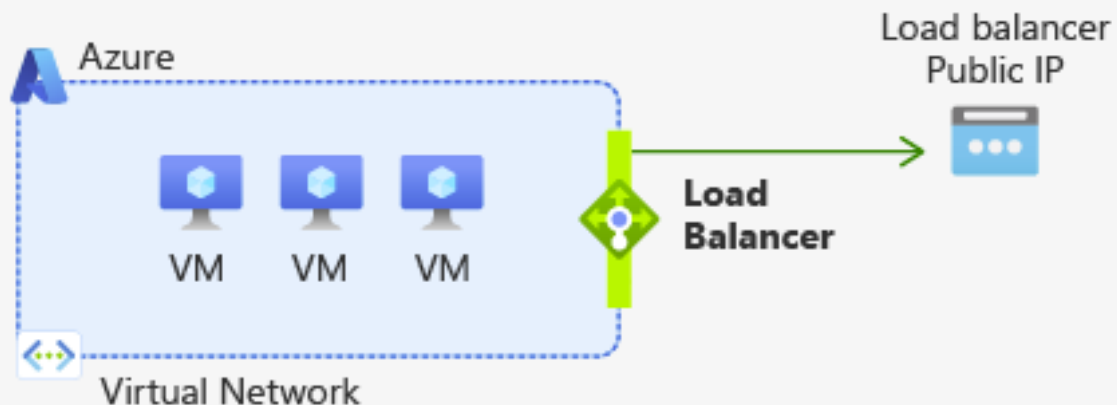
Scalable backend services for APIs, web apps, or mobile apps

Big data processing and batch workloads

Virtual Machine Scale Sets vs VMs

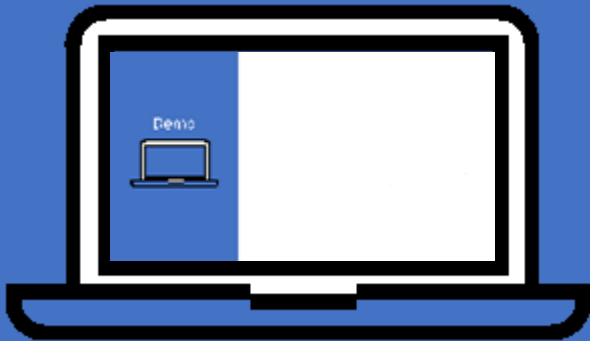


Does not scale as networks grow



Scales as network grow

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

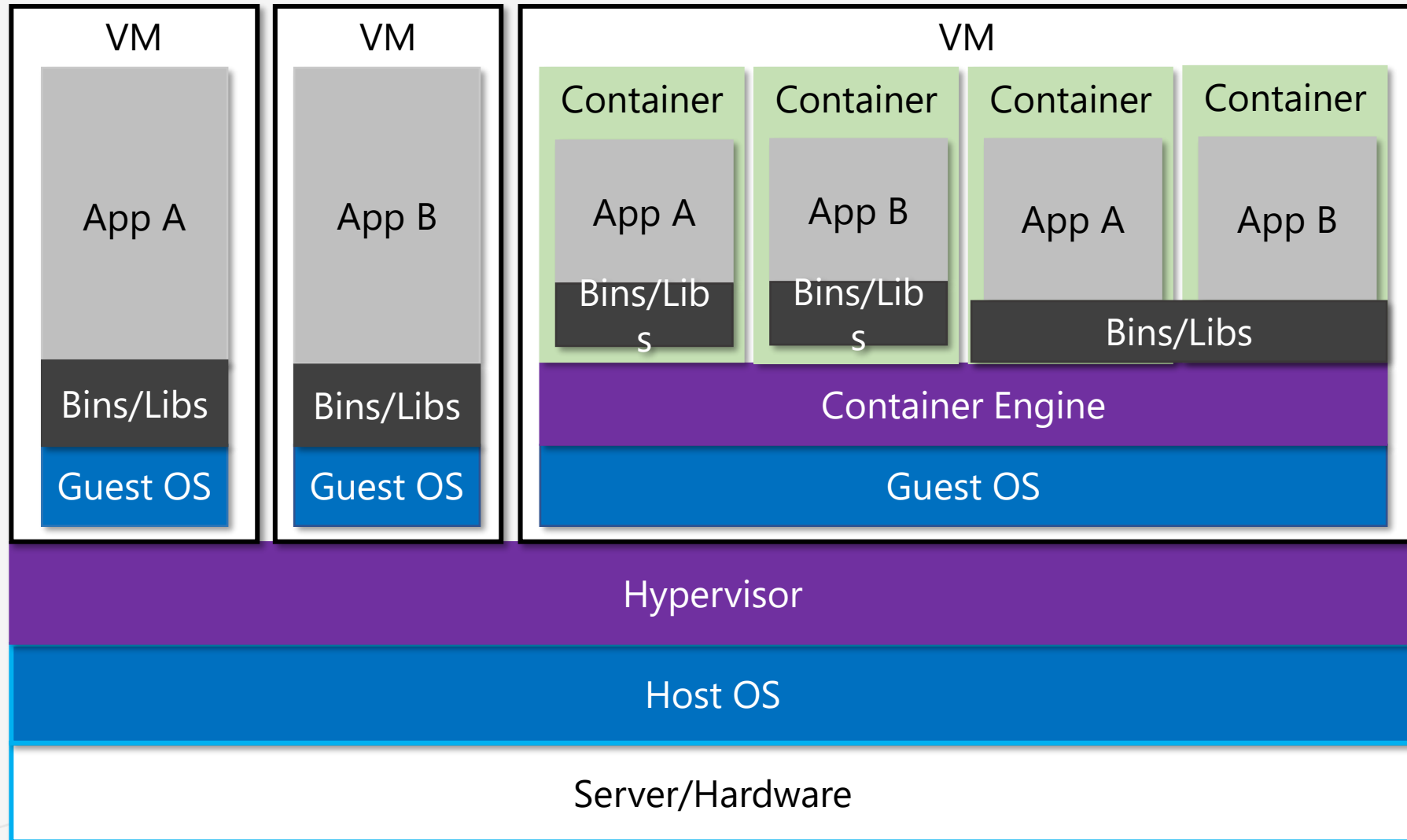
Use Cases:

Development and testing of containerized applications

Running background jobs or event-driven tasks

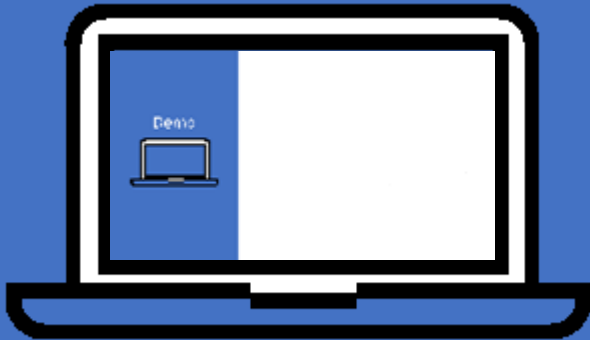
Proof of concept and short-lived workloads

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

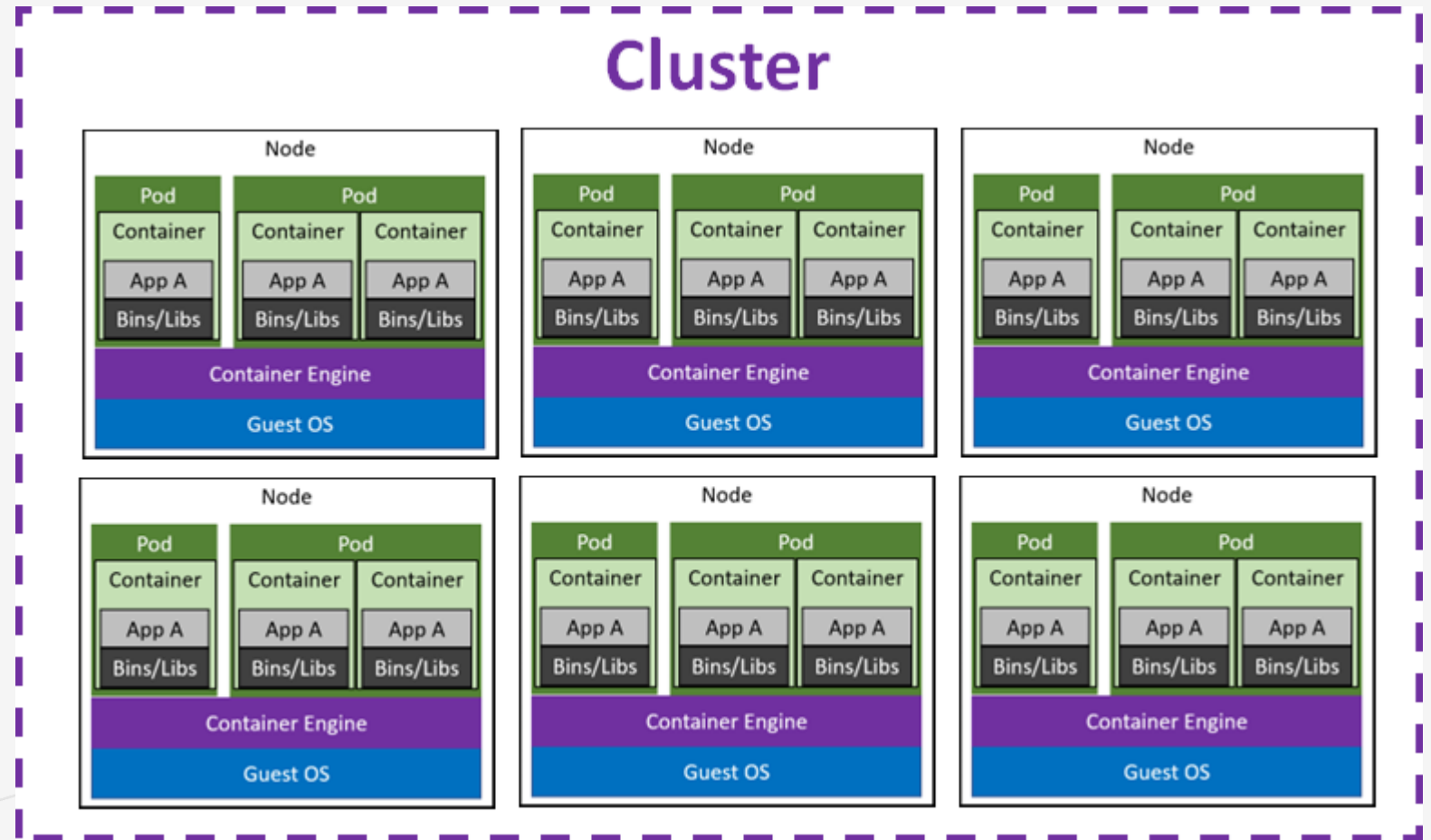
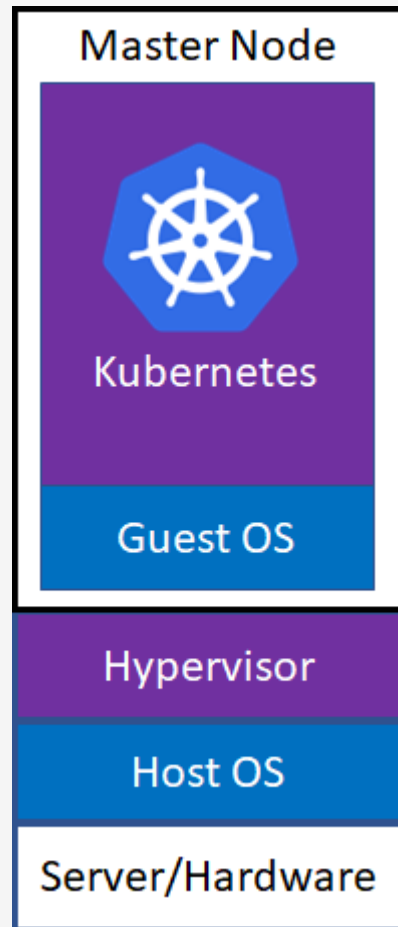
Use cases:

Microservices architecture

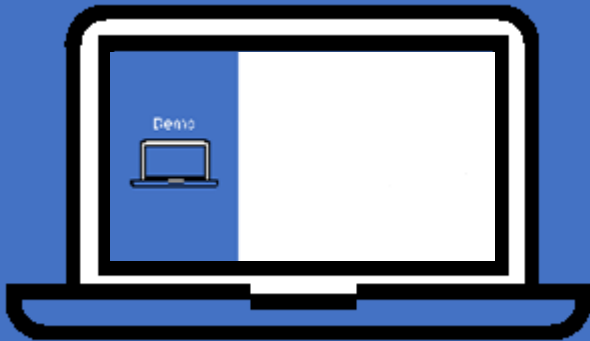
Containerized application hosting



Kubernetes



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

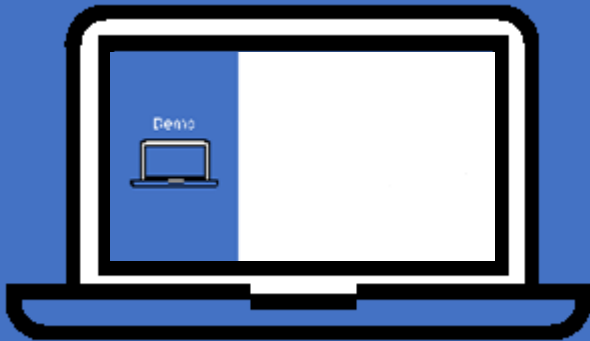
API integration

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

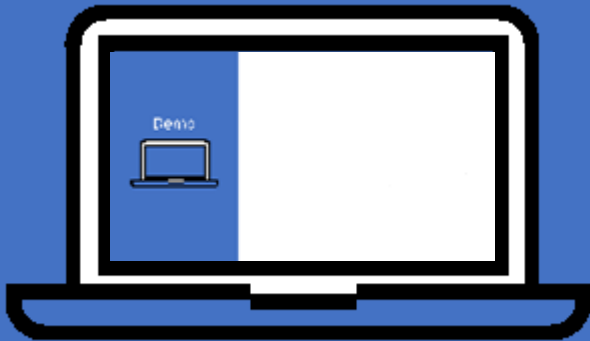
Automation

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

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>

A decorative pattern of light gray lines forming a grid of diamond shapes, located at the bottom of the slide.

What's Next

Azure Storage 101:

Getting Started with Cloud Storage

Sept 25th, 2024, 6:00 PM to 7:30 PM EDT

Azure Compute 102:

Getting Started with Cloud Compute

Dec 5th, 2024, 6:00 PM to 7:30 PM EDT

Azure Networking 103:

Getting Started with Cloud Networking

Jan 15th, 2024, 6:00 PM to 7:30 PM EDT