



Azure Fundamentals

Technical Fundamentals to Build Your Cloud
Journey



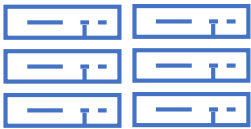
What is the cloud?

The journey to the cloud



On-Premises

Infrastructure Platform



IaaS

Infrastructure Platform
"Lift and shift"



Containers

Managed Container Platform



PaaS/Serverless

Application Platform

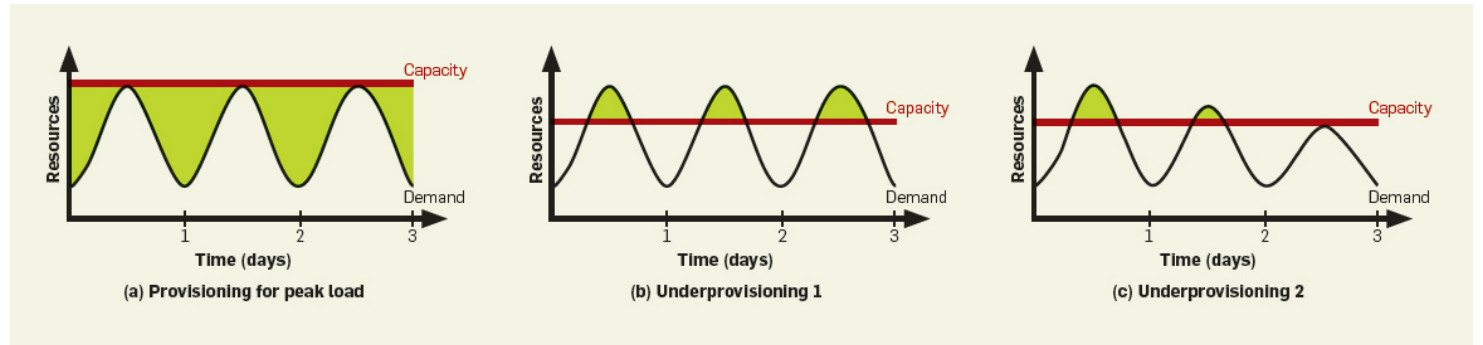
SaaS

Replace



Why move to the cloud?

- Cost effective
- Scalable
- Elastic
- Reliable
- Secure





Styles of cloud computing

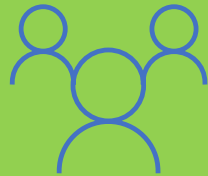
Style of cloud

Public

Most common

No local hardware to
manage

Save costs by sharing
resources with other
cloud users



Style of cloud

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Private

Cloud environment in your data center

Self-service access to users in your organization



Style of cloud

Public

Most common

No local hardware to manage

Save costs by sharing resources with other cloud users



Private

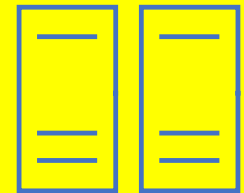
Cloud environment in your data center

Self-service access to users in your organization



Hybrid

Combines public and private clouds



Cloud computing categories

- Infrastructure as a Service (IaaS)



Cloud computing categories

- Infrastructure as a Service (IaaS)
- Platform as a Service (PaaS)

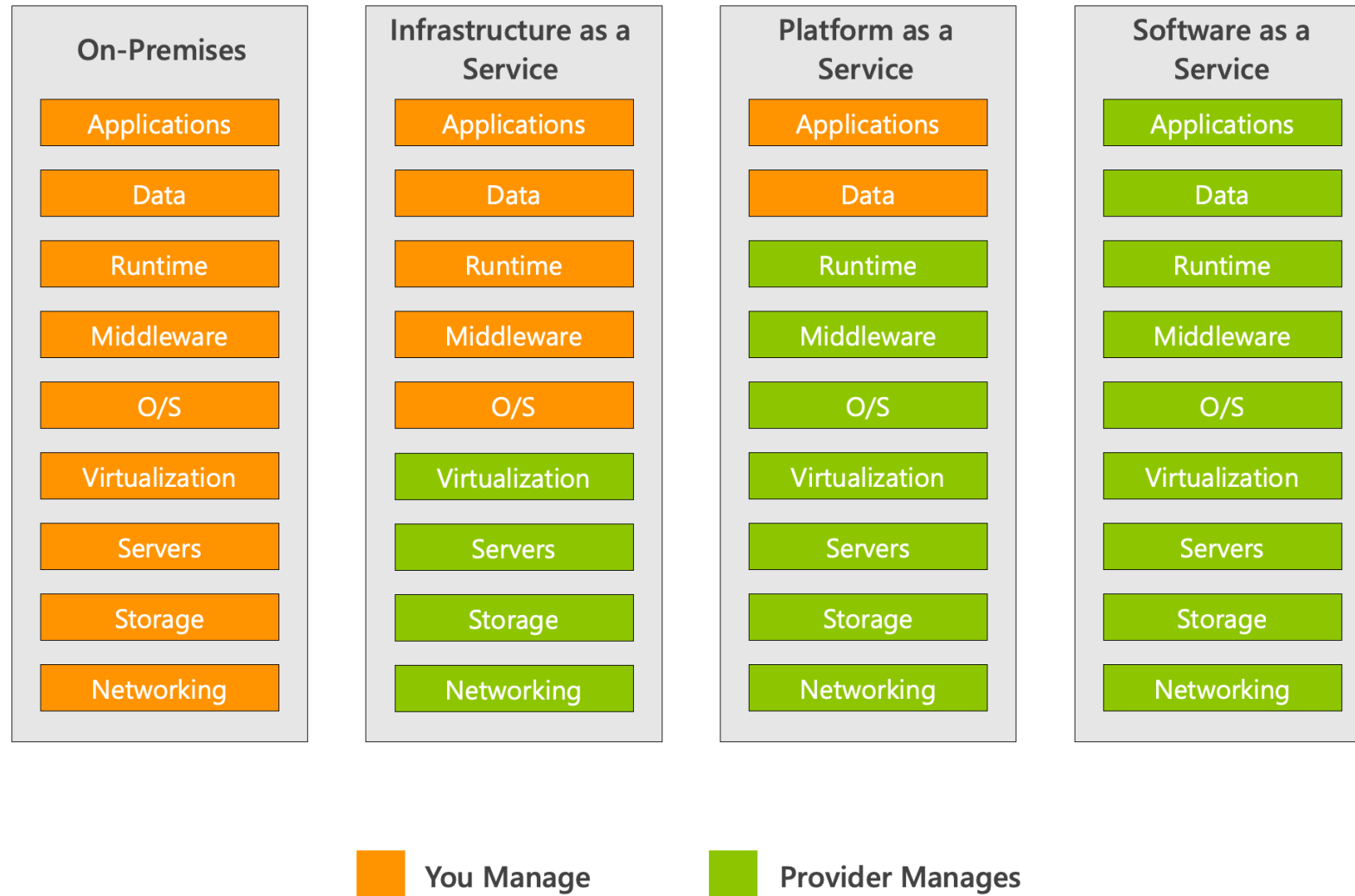


Cloud computing categories

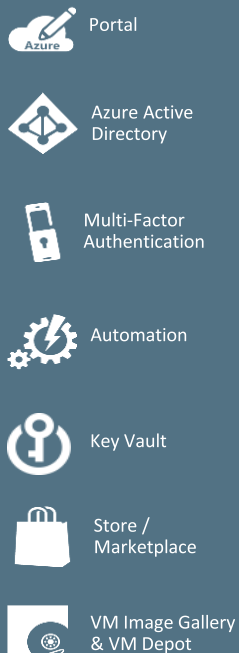
- Infrastructure as a Service (IaaS)
- Platform as a Service (PaaS)
- Software as a Service (SaaS)



Cloud computing categories overview

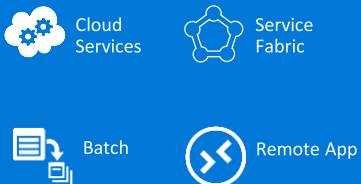


Security & Management

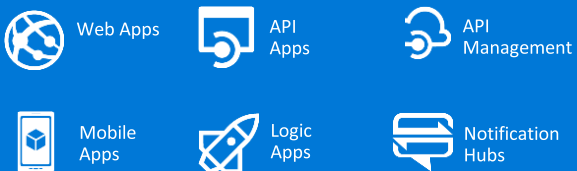


Platform Services

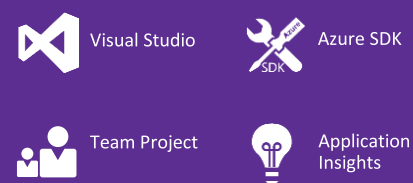
Compute



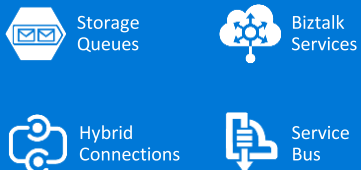
Web and Mobile



Developer Services



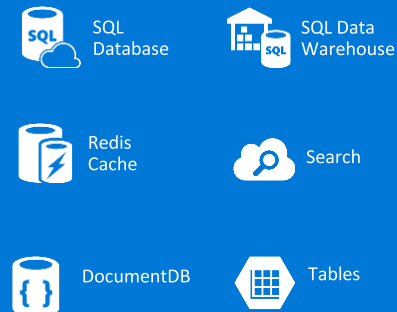
Integration



Analytics & IoT



Data



Media & CDN



Hybrid Operations



Infrastructure Services

Compute



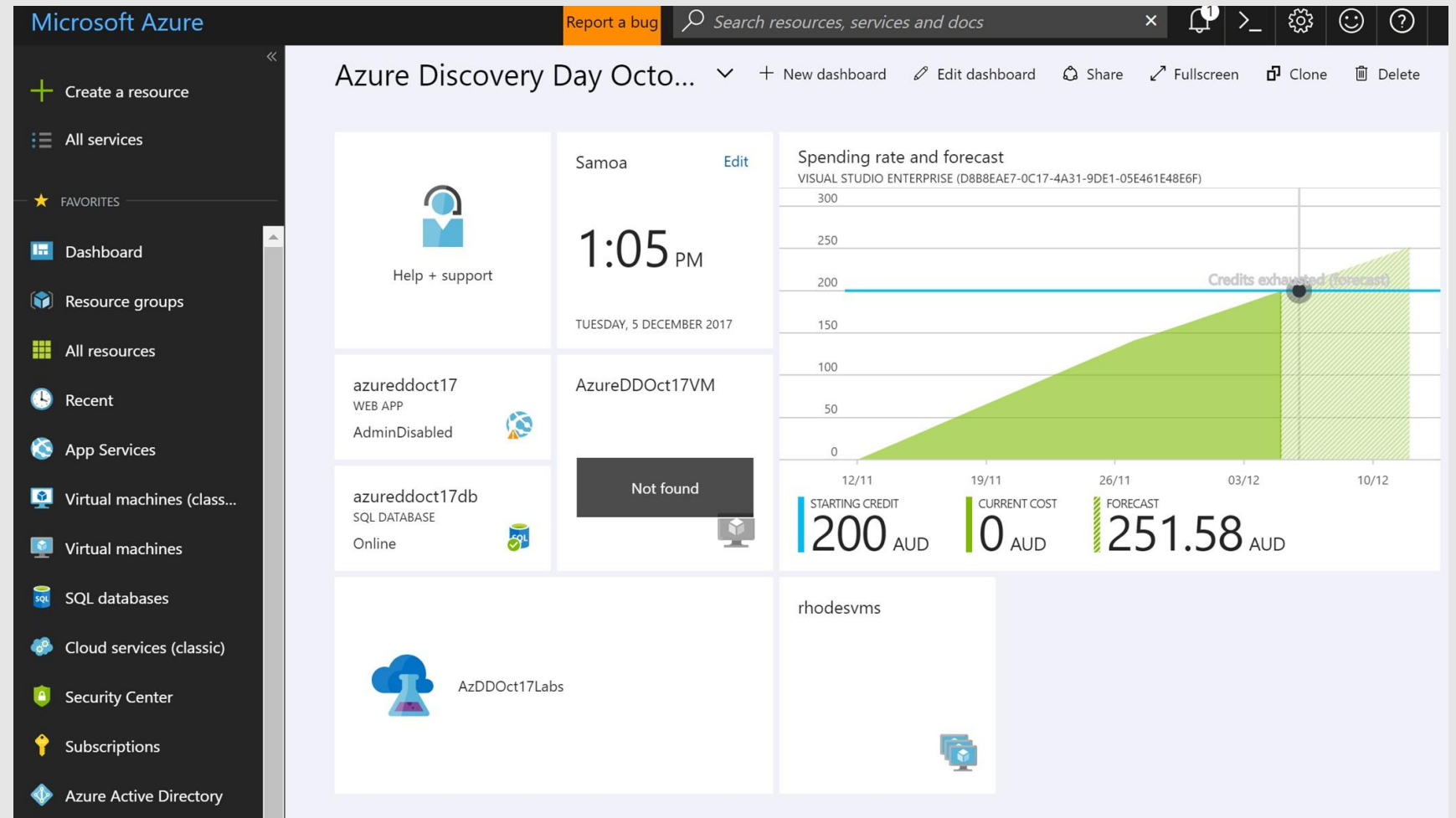
Storage



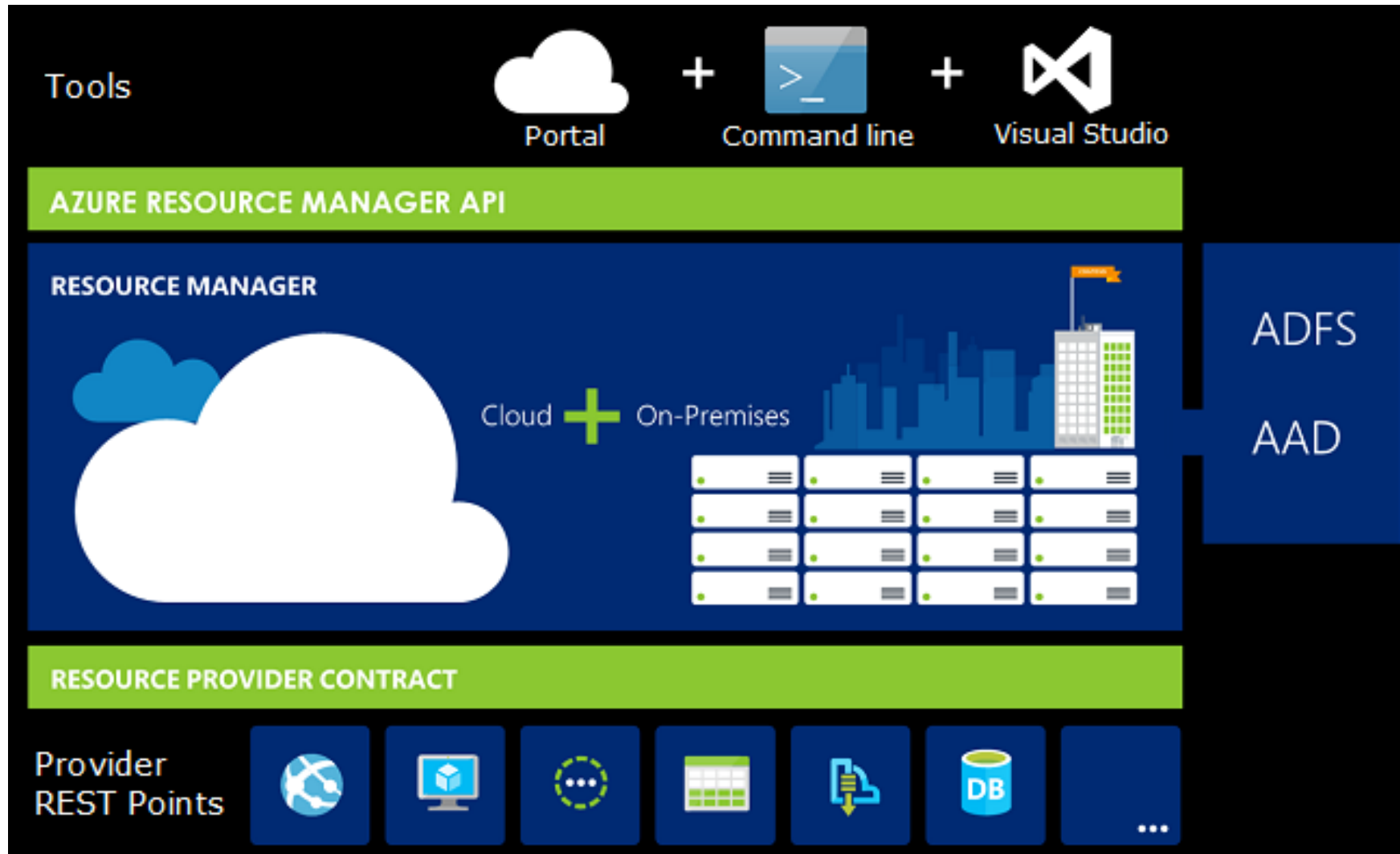
Networking



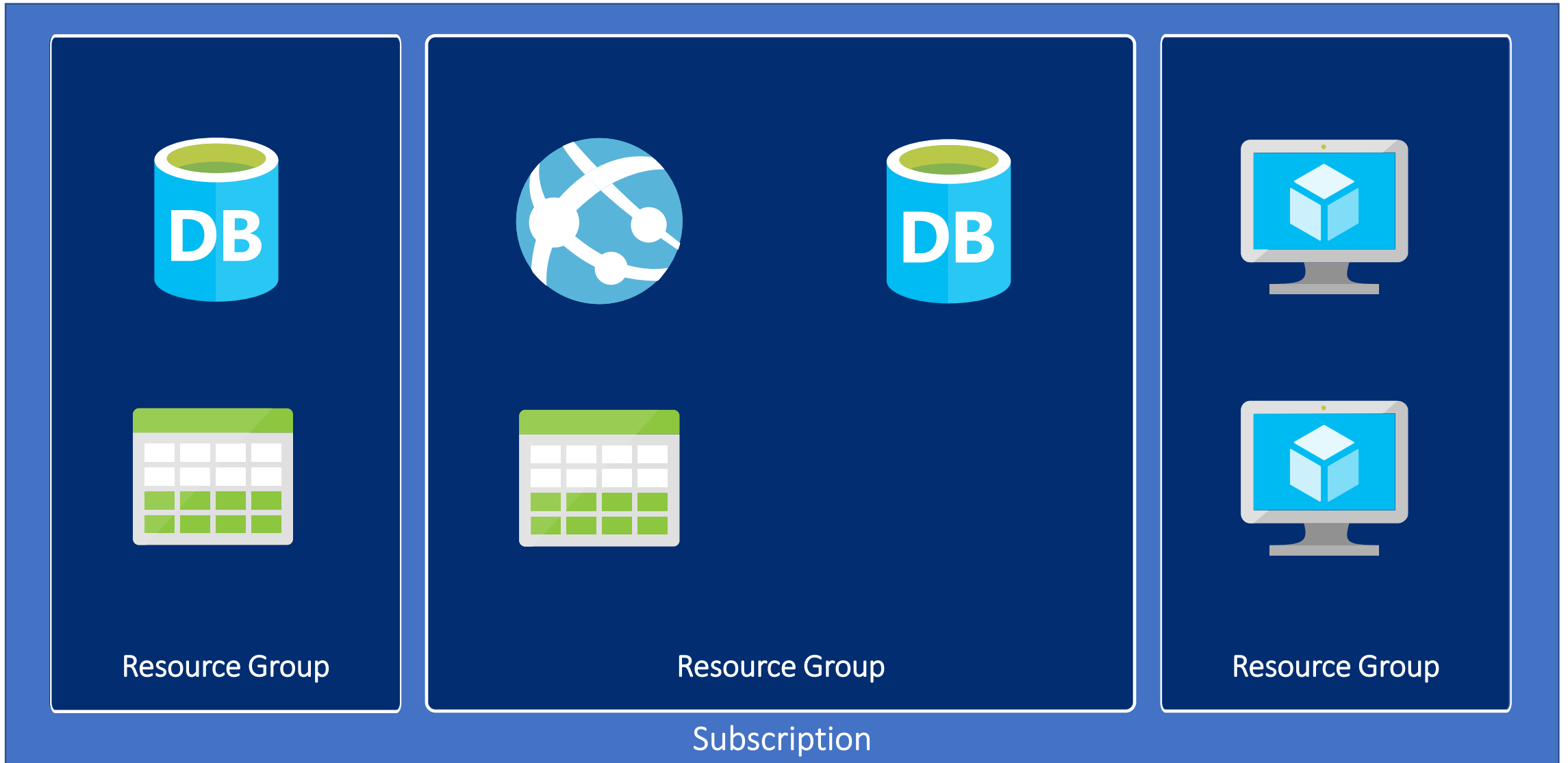
Azure Portal



Azure Resource Manager



Subscriptions, resource groups, and resources



Azure Resource Manager Template

```
"resources": [  
  {  
    "apiVersion": "2016-01-01",  
    "type": "Microsoft.Storage/storageAccounts",  
    "name": "mystorageaccount",  
    "location": "westus",  
    "sku": {  
      "name": "Standard_LRS"  
    },  
    "kind": "Storage",  
    "properties": {}  
  }  
]
```





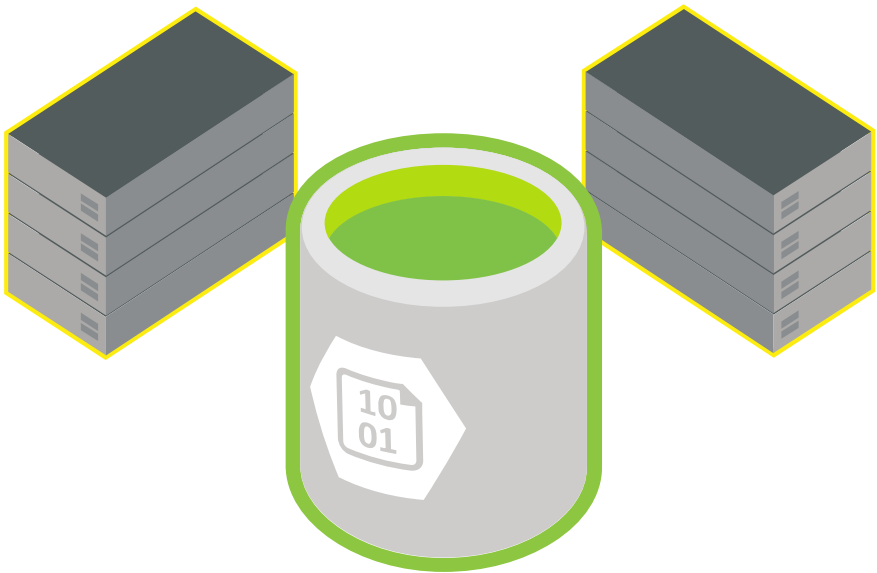
Storage

Storage account features

Storage type	File	Disk	Blob	Queue	Table
Typical use	IaaS		PaaS		
Overview	Simple, distributed cross-platform file system	Premium storage for I/O-intensive applications	Massively scalable object storage for unstructured data	Durable queues for large-volume cloud services	Flexible NoSQL database

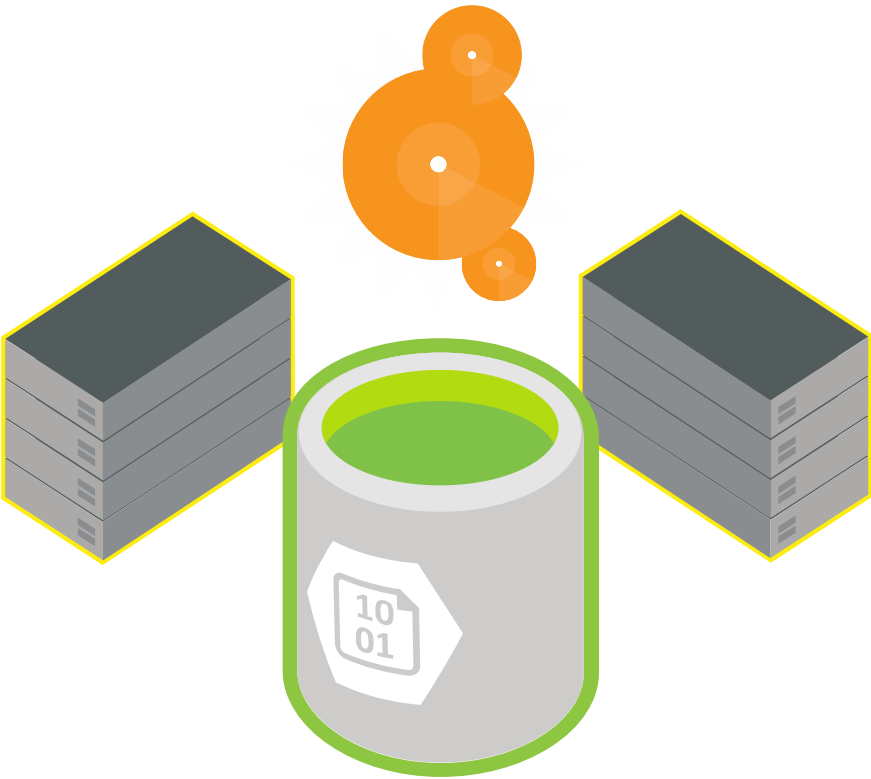
Blob storage tiers

	Hot	Cool
Use cases	Data that is active in use, or expected to be accessed frequently	Data that is archived and not expected to be accessed frequently
Availability	99.9%	99%
Usage charges	Higher storage costs, lower access and transaction costs	Lower storage costs, higher access and transaction costs
Latency	milliseconds	milliseconds



Disk storage tiers

	Standard	Premium
Disk type	Hard Disk Drive (HDD)	Solid State Drive (SSD)
IOPS per disk	500	120-7500 (based on disk size)
Throughput per disk	60 MB/sec	25-250 MB/sec (based on disk size)
Maximum disk size	4TB	4TB
Max IOPS per VM	32,000 IOPS (when using a GS5 VM)	80,000 IOPS (when using a GS5 VM)
Max throughput per VM	2,000 MB/s (when using a GS5 VM)	2,000 MB/s (when using a GS5 VM)





Networking

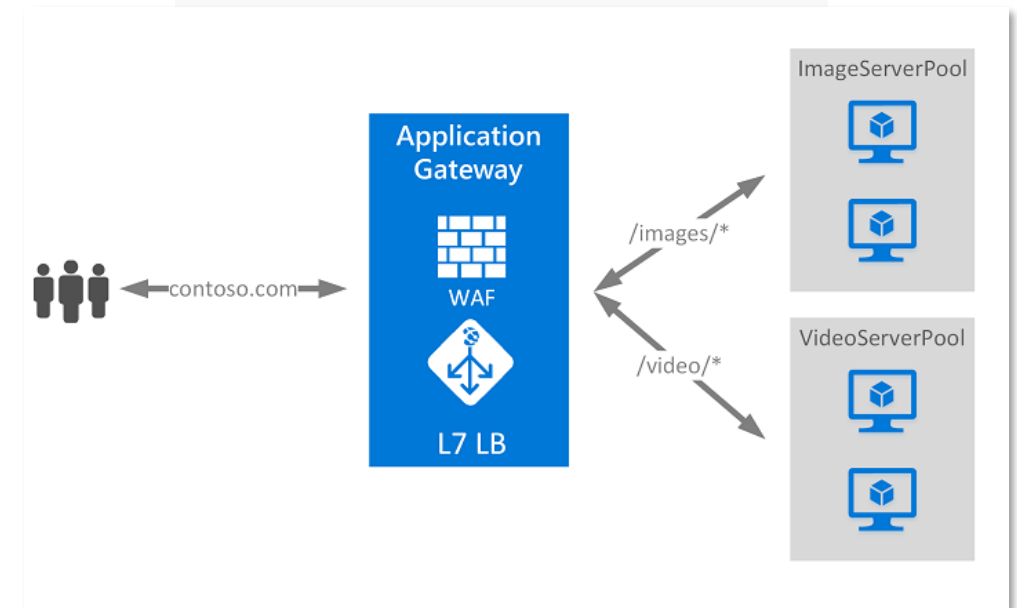
What is Azure Load Balancer?

Load Balancer distributes new inbound flows that arrive on the load balancer's frontend to backend pool instances, according to rules and health probes.



What is Application Gateway?

Azure Application Gateway is a web traffic load balancer that enables you to manage traffic to your web applications.



What is
Traffic Manager?

The job of Azure Load Balancer is to direct traffic inside a region.





Identity

What is Azure Active Directory?

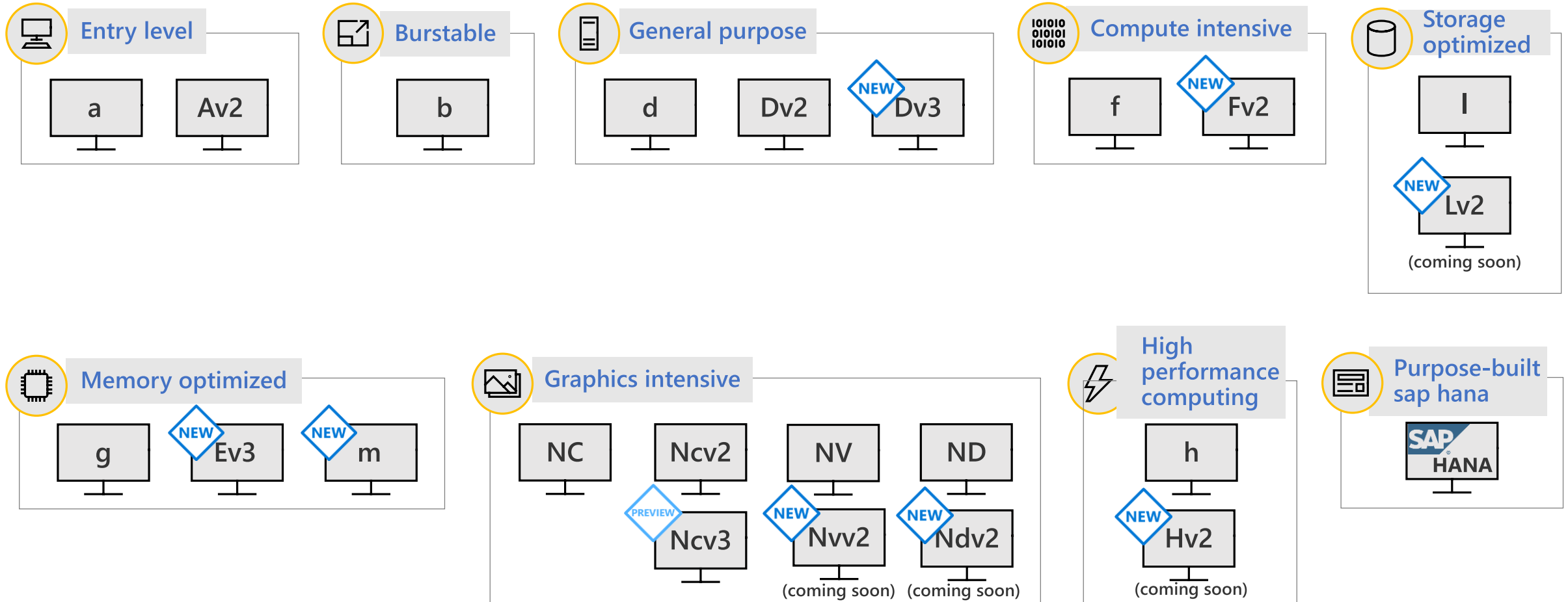
Azure Active Directory (Azure AD) is Microsoft's multi-tenant, cloud-based directory and identity management service. **Azure AD** is the centralized directory store used by Azure and Office 365, containing all the identities of users inside your organization.





Virtual Machines

Compute options





Platform as a Service

Platform as a Service scenarios

Azure App Service

Quickly build, deploy, and scale enterprise-grade web, mobile, and API apps running on any platform



SQL Azure Databases

Managed database services that takes care of scalability, backup, and high availability of the database



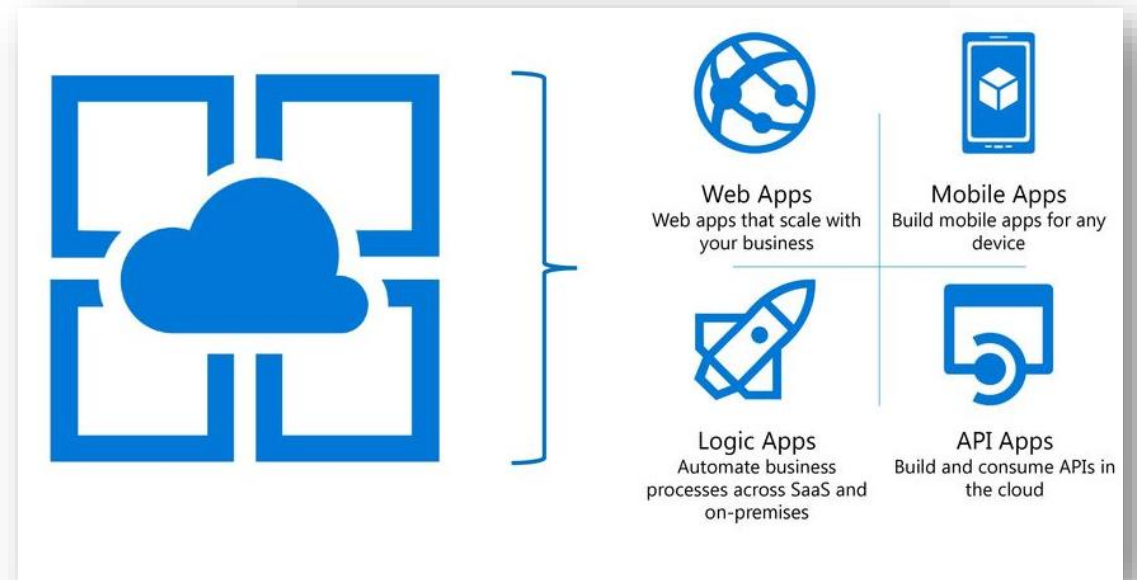
Azure Functions

Azure Functions is a solution for easily running small pieces of code, or "functions," in the cloud



App Service Environments (ASEs)

- ❑ Very high scale.
- ❑ Isolation & secure network access.
- ❑ High memory utilization.





Containers

The benefits of using containers



Containers in Azure



App
Service

Deploy web apps or APIs
using containers in a PaaS
environment



Service
Fabric

Modernize .NET
applications to
microservices using
Windows Server
containers



Azure Kubernetes
Service

Scale and orchestrate
Linux containers using
Kubernetes



Container
Instance

Elastically burst from your
Azure Kubernetes Service
(AKS) cluster



Ecosystem

Bring your Partner
solutions that run great
on Azure



Azure Container Registry



Docker Hub

Choice of developer tools and clients



Integration

Core integration services in Azure

API
Management

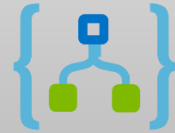


Discover, manage
and secure connectivity

Turnkey solution

Gain insights

Logic
Apps



Connect SaaS applications

Unlock value from
hybrid deployments

Leverage Azure Services

Azure
Functions



Event driven

Compute-on-demand

Support for common
languages

Service
Bus



Cloud-based messaging
service

Connect to the cloud

Secure and predictable
message delivery



Cognitive Services

Cognitive Services



Decision



Speech



Language



Vision



Search



DevOps

Azure DevOps

Azure Boards



Plan, track, and discuss work across teams, deliver value to your users faster

Azure Repos



Unlimited cloud-hosted private Git repos. Collaborative pull requests, advanced file management, and more

Azure Pipelines



CI/CD that works with any language, platform, and cloud. Connect to GitHub or any Git provider and deploy continuously to any cloud

Azure Test Plans



The test management and exploratory testing toolkit that lets you ship with confidence

Azure Artifacts



Create, host, and share packages. Easily add artifacts to CI/CD pipelines

Demo

<https://aka.ms/azure-portal>

















/Docs alert

Microsoft Docs has thousands of articles about Azure and its various services

<https://aka.ms/learn-azure>

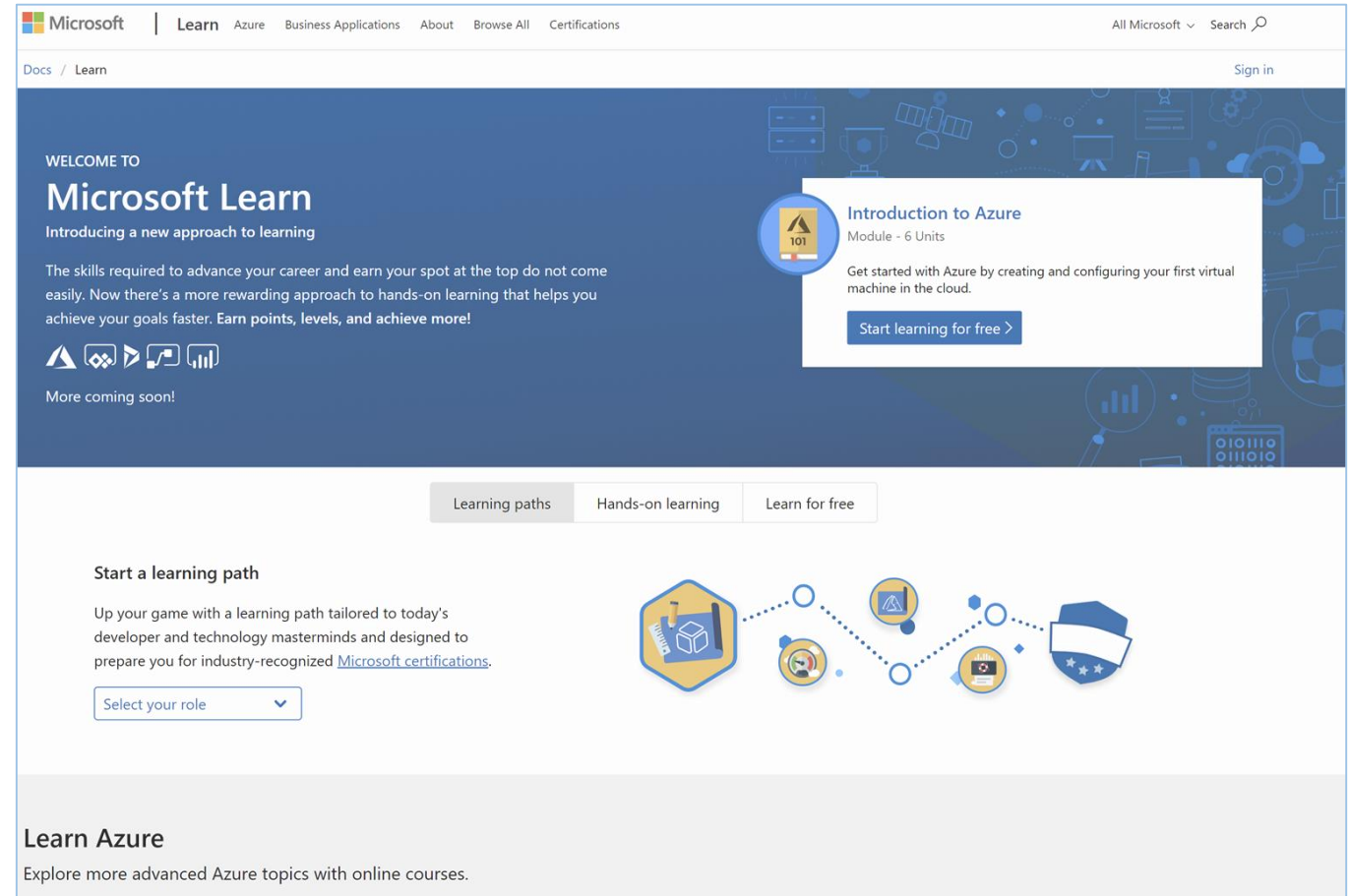
Get Started	Products	SDKs/Tools	Architecture
All			
Compute	<div>Linux Virtual Machines Provision virtual machines of Ubuntu, Red Hat, and more</div>	<div>Windows Virtual Machines Provision virtual machines for SQL Server, SharePoint, and more</div>	<div>App Service Quickly create powerful cloud apps for web and mobile</div>
Networking			
Storage			
Web			
Mobile			
Containers			
Databases			
Analytics			
AI + Machine Learning			
Internet of Things			
Integration			
Identity			
Security			
DevOps			
Developer Tools			
Management Tools			
Media			
	<div>Functions Process events with serverless code</div>	<div>Batch Cloud-scale job scheduling and compute management</div>	<div>Container Instances Easily run containers with a single command</div>
	<div>Azure Batch AI Easily experiment and train your deep learning and AI models in parallel at scale</div>	<div>Service Fabric Develop microservices and orchestrate containers on Windows or Linux</div>	<div>Virtual Machine Scale Sets Manage and scale up to thousands of Linux and Windows virtual machines</div>
	<div>Azure Kubernetes Service (AKS) Simplify the deployment, management, and operations of Kubernetes</div>	<div>Cloud Services Create highly-available, infinitely-scalable cloud applications and APIs</div>	<div>SQL Server on Virtual Machines Host enterprise SQL Server apps in the cloud</div>



/Microsoft Learn

Learn Azure at your own
pace via Microsoft Learn

<https://aka.ms/learn-azure>



The screenshot shows the Microsoft Learn homepage. At the top is a navigation bar with the Microsoft logo, 'Learn' link, and other links like 'Azure', 'Business Applications', 'About', 'Browse All', and 'Certifications'. There's also a search bar and a 'Sign in' link. Below the navigation bar, the main header area has a dark blue background with the text 'WELCOME TO Microsoft Learn' and 'Introducing a new approach to learning'. It includes a paragraph about the benefits of the learning approach and a row of icons representing different learning methods. A prominent white box on the right side of the header promotes the 'Introduction to Azure' module, stating it has 6 units and provides a 'Start learning for free' button. Below the header, there are three tabs: 'Learning paths', 'Hands-on learning', and 'Learn for free'. The 'Learning paths' tab is active, showing a section titled 'Start a learning path' with a description and a 'Select your role' dropdown menu. To the right of this text is a horizontal sequence of five icons connected by dotted lines, representing a learning path. The bottom of the page features a light gray section titled 'Learn Azure' with the text 'Explore more advanced Azure topics with online courses.'

Microsoft | Learn Azure Business Applications About Browse All Certifications All Microsoft Search

Docs / Learn Sign in

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The skills required to advance your career and earn your spot at the top do not come easily. Now there's a more rewarding approach to hands-on learning that helps you achieve your goals faster. Earn points, levels, and achieve more!

More coming soon!

Introduction to Azure
Module - 6 Units

Get started with Azure by creating and configuring your first virtual machine in the cloud.

[Start learning for free >](#)

Learning paths Hands-on learning Learn for free

Start a learning path

Up your game with a learning path tailored to today's developer and technology masterminds and designed to prepare you for industry-recognized [Microsoft certifications](#).

Select your role

Learn Azure
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Frank Boucher

fboucheros

cloud5mins.com

frank.boucher@microsoft.com

