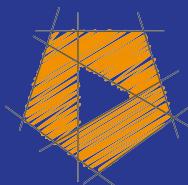


AZ-900 Microsoft Azure Fundamentals

Scott Duffy, Instructor



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Nov 2020 update

Microsoft Azure Fundamentals

“foundational level knowledge of cloud services and how those services are provided with Microsoft Azure”

Microsoft Azure Fundamentals

- Candidates with non-technical backgrounds
- Candidates with a technical background who have a need to validate their foundational level knowledge around cloud services

Microsoft Azure Fundamentals

- Describe cloud concepts
- Describe core Azure services
- Describe core solutions and management tools
- Describe general and network security features
- Describe identity, governance, privacy and Compliance features
 - Describe cost management and SLA

You'll be prepared
to take and pass
the AZ-900 exam



Created by Adrien Coquet
from Noun Project

But you don't have
to, if you just want
to learn cloud
concepts



Created by Adrien Coquet
from Noun Project

What is the Cloud?



There is no cloud
it's just someone else's computer

The ability to rent computing resources - on demand



Created by Alvida Biersack
from Noun Project

What Computing Resources?

Windows and Linux Servers

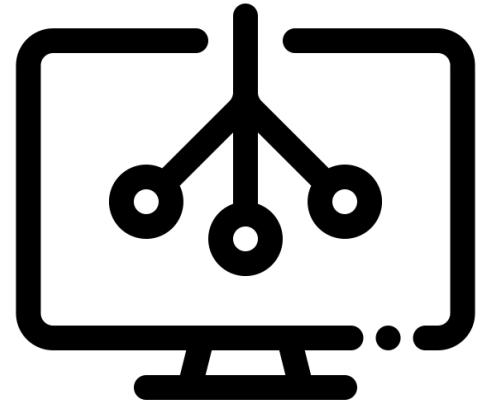
Unlimited Storage

Databases

Queues

Content Delivery Network

Batch Processing Jobs



Created by Timofei Rostilov
from Noun Project

What Computing Resources?

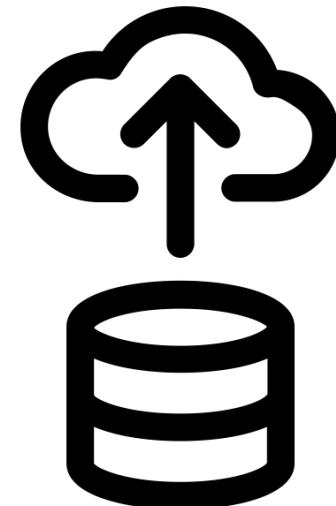
Big Data - Hadoop

Media Services

Machine Learning

Chat Bots

Cognitive Services



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1 000+

Azure Service options



Exam AZ-900: Microsoft Azure Fundamentals

In response to the coronavirus (COVID-19) situation, Microsoft is implementing several temporary changes to our training and certification program. [Learn more.](#)

The content of this exam was updated on November 9, 2020. Please download the skills measured document below to see what changed.

Candidates for this exam should have foundational knowledge of cloud services and how those services are provided with Microsoft Azure. The exam is intended for candidates who are just beginning to work with cloud-based solutions and services or are new to Azure.

Azure Fundamentals exam is an opportunity to prove knowledge of cloud concepts, Azure services, Azure workloads, security and privacy in Azure, as well as Azure pricing and support. Candidates should be familiar with the general technology concepts, including concepts of networking, storage, compute, application support, and application development.

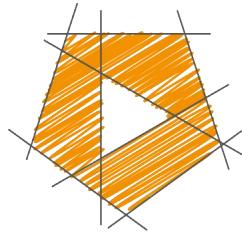
Azure Fundamentals can be used to prepare for other Azure role-based or specialty certifications, but it is not a prerequisite for any of them.

Part of the requirements for: [Microsoft Certified: Azure Fundamentals](#)

Related exams: none

Important: [See details](#)

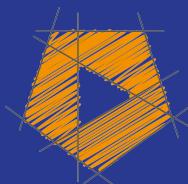
[Go to Certification Dashboard](#)



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Describe Cloud Concepts (20-25%)

Describe Cloud Concepts (20-25%)

Identify the benefits and considerations of using cloud services

- identify the benefits of cloud computing, such as High Availability, Scalability, Elasticity, Agility, and Disaster Recovery
- identify the differences between Capital Expenditure (CapEx) and Operational Expenditure (OpEx)
- describe the consumption-based model

Describe the differences between categories of cloud services

- describe the shared responsibility model
- describe Infrastructure-as-a-Service (IaaS),
- describe Platform-as-a-Service (PaaS)
- describe serverless computing
- describe Software-as-a-Service (SaaS)
- identify a service type based on a use case

Describe the differences between types of cloud computing

- define cloud computing
- describe Public cloud
- describe Private cloud
- describe Hybrid cloud
- compare and contrast the three types of cloud computing

Benefits of Cloud Computing

Benefits

Cost savings - both real and accounting

Agility

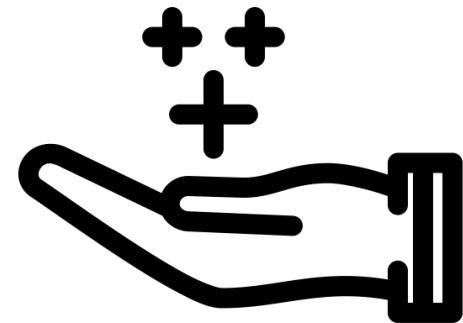
Availability

Security

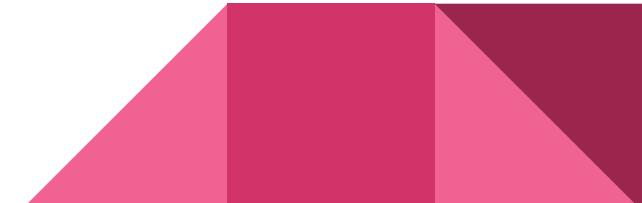
Global reach

Range of ready on-demand services

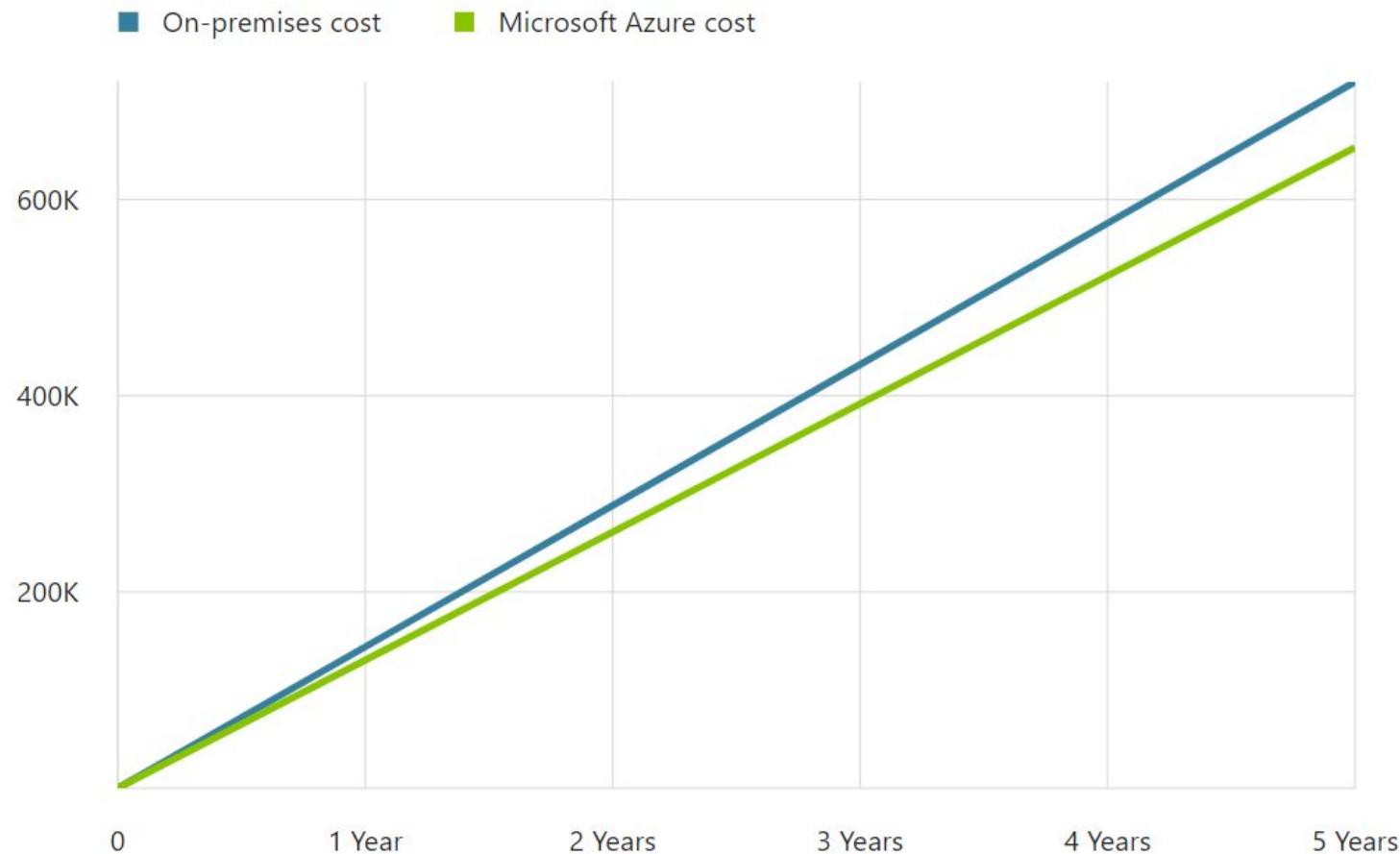
Range of tools



Created by alvianwijaya
from Noun Project



Cost Savings



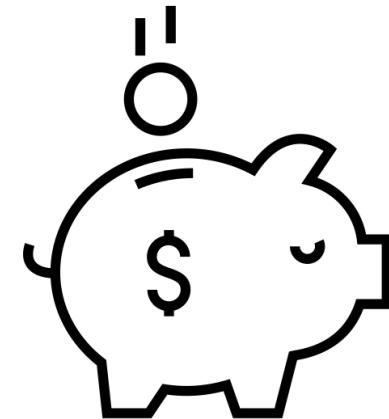
Cost Savings - Real

Economies of scale

Total cost of ownership (TCO) - electricity, Internet, cooling, employees

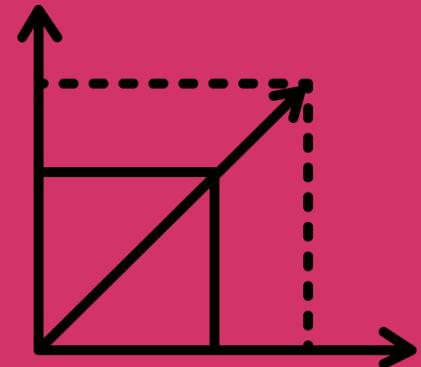
Microsoft can run a server cheaper than anyone else with few exceptions

4 vCPU server - as low as \$187/mo



Created by VectorBakery
from Noun Project

You can take
actions to reduce
your cost -
i.e. autoscaling



Created by Alla Zalewska
from Noun Project

Global Reach

It's not possible for
most businesses to
run data centers in
multiple countries



Created by Creative Stall
from Noun Project

High Availability



Expressed as a percentage,
it's the ability of a system to
respond to users

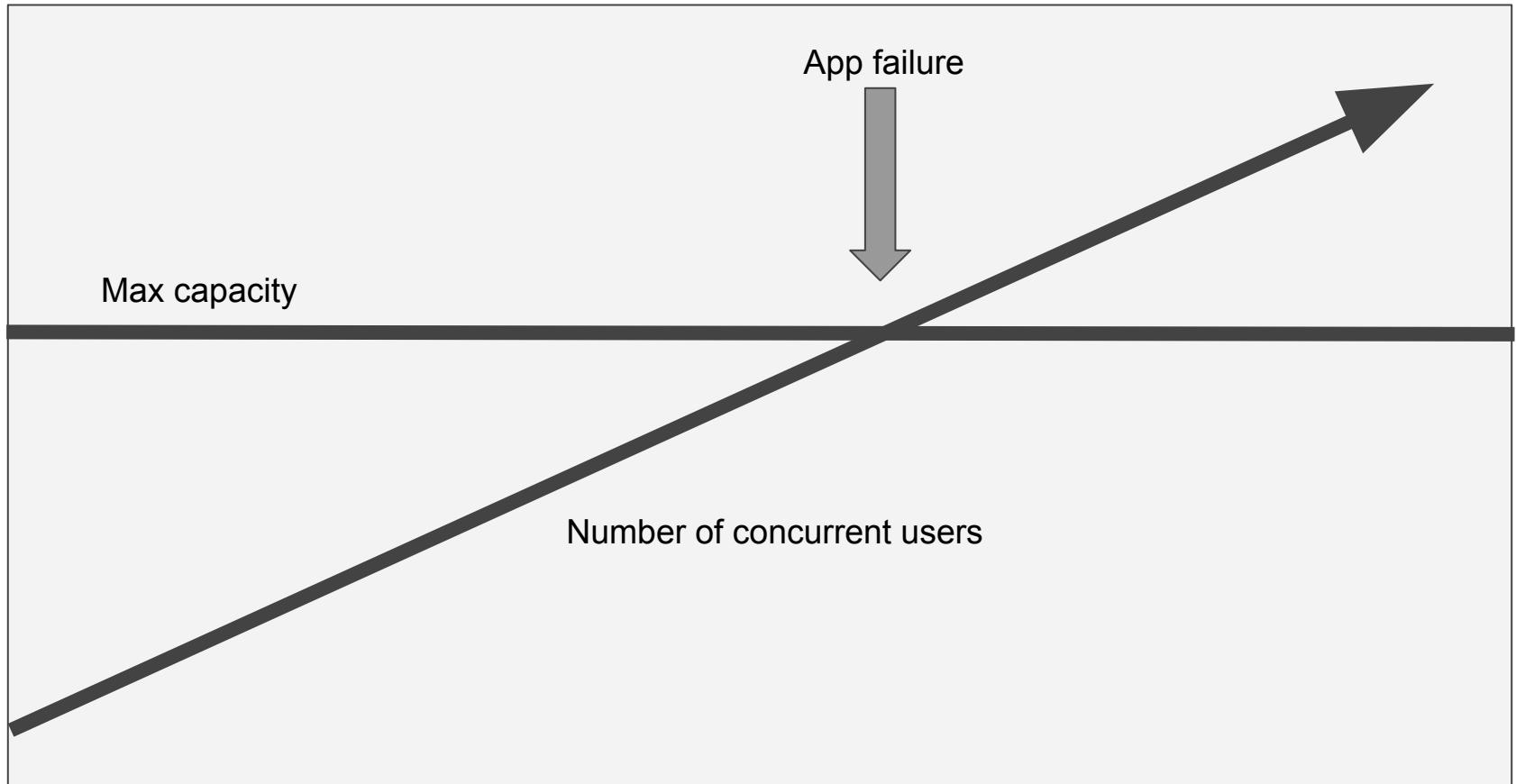
99.99%

Four nines, 4 minutes per month

Scalability



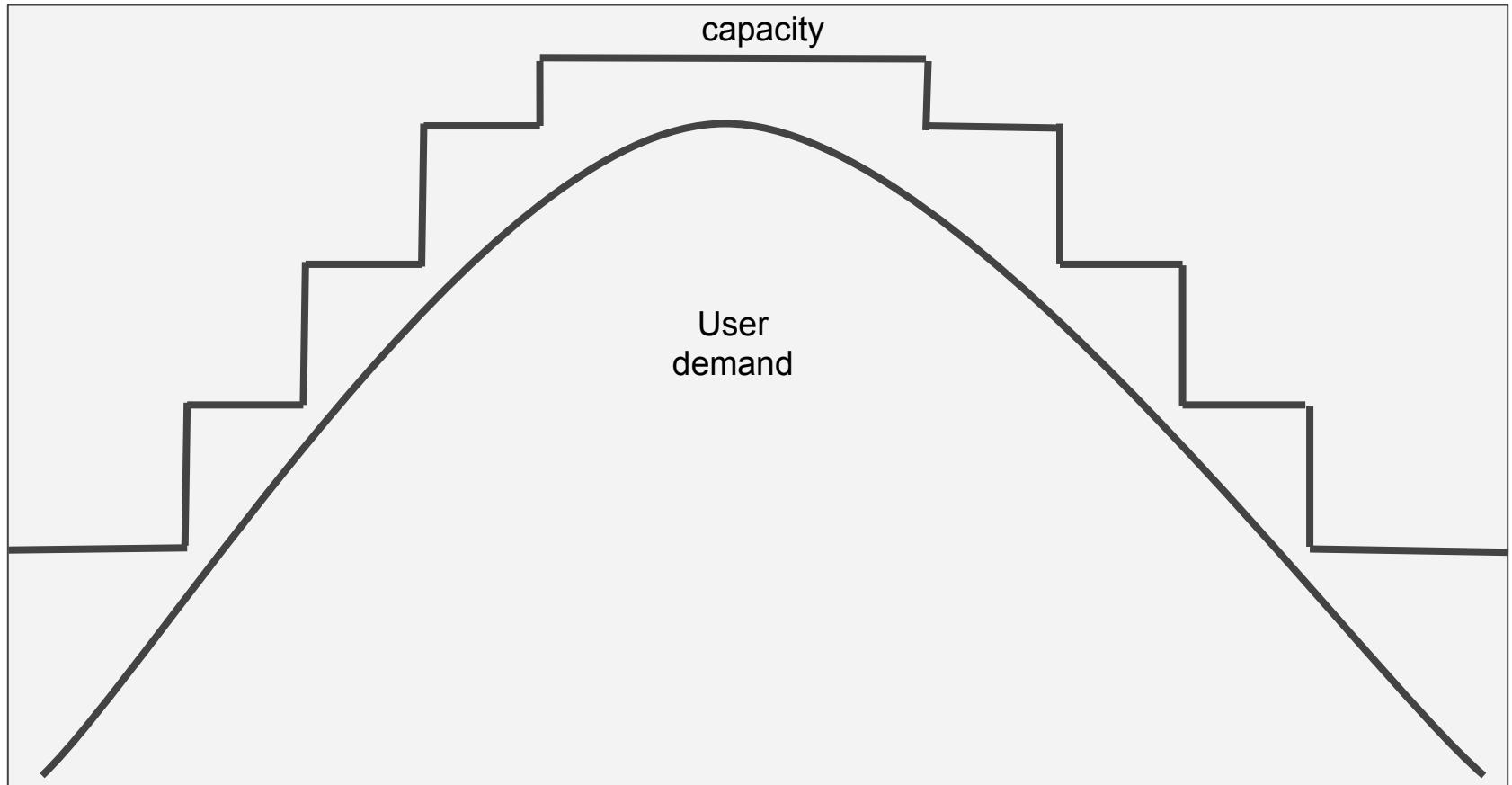
The ability of a system to handle growth of users or work



Elasticity



The ability of a system to automatically grow and shrink based on application demand



Agility



The ability to change rapidly
based on changes to market
or environment

Disaster Recovery



The ability of a system to recover from failure within a period of time, and how much data is lost

Capital Expenditure (CapEx) and Operational Expenditure (OpEx)



CapEx is money invested in assets (like computers) that return investment over time



OpEx is money spent every day on operating expenses

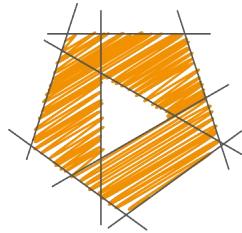
Consumption-Based Model



Pay per minute

Pay per hour

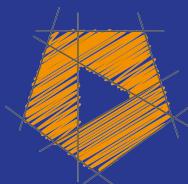
Pay per execution



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Infrastructure-as-a- Service (IaaS)



Virtual machines, networking, load balancers, firewalls

Platform-as-a-Service (PaaS)



Upload code packages and
have them run, without access
to the hardware

Software-as-a-Service (SaaS)



Access to configuration only

Shared Responsibility Model

Shared responsibility model



Serverless

There are still
servers... you just
don't ever have to
deal with them



Created by Jae Deasigner
from Noun Project

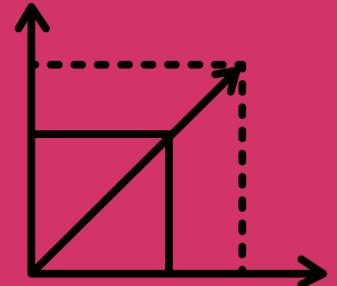


Even less access to
the server than
PaaS



Even with PaaS, you
have to choose an
App Service Plan

With PaaS, scaling is your responsibility



Created by Alla Zaleuska
from Noun Project



Serverless means
not worrying about
choosing the right
plan



Serverless means
not worrying about
scaling



Serverless means
you might pay \$0 if
you don't use the
service

Azure Serverless Offers

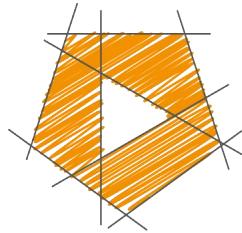
Compute - Azure Functions

Compute - Serverless Kubernetes (Virtual Nodes w/ ACI)

Database - Azure SQL Database Serverless

Database - Cosmos DB Serverless (preview)

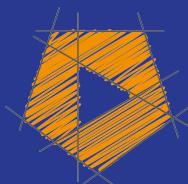




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Public cloud



Azure owns the hardware,
on their network and
infrastructure

Private cloud



Looks and acts like a cloud,
except customer owns or
leases or has exclusive
access to the hardware

Hybrid cloud

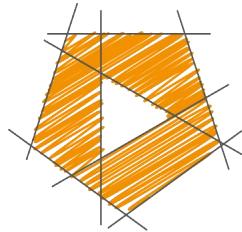


Combination of public and private clouds; scale private infrastructure to the cloud

Compare and Contrast



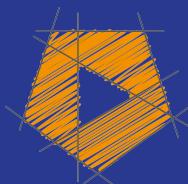
Public vs private vs hybrid



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Describe Core Azure Services (15-20%)

Describe Core Azure Services (15-20%)

Describe the core Azure architectural components

- describe the benefits and usage of Regions and Region Pairs
- describe the benefits and usage of Availability Zones
- describe the benefits and usage of Resource Groups
- describe the benefits and usage of Subscriptions
- describe the benefits and usage of Management Groups
- describe the benefits and usage of Azure Resource Manager
- explain Azure resources

Describe core resources available in Azure

- describe the benefits and usage of Virtual Machines, Azure App Services, Azure Container Instances (ACI), Azure Kubernetes Service (AKS), and Windows Virtual Desktop
- describe the benefits and usage of Virtual Networks, VPN Gateway, Virtual Network peering, and ExpressRoute
- describe the benefits and usage of Container (Blob) Storage, Disk Storage, File Storage, and storage tiers
- describe the benefits and usage of Cosmos DB, Azure SQL Database, Azure Database for MySQL, Azure Database for PostgreSQL, and SQL Managed Instance
- describe the benefits and usage of Azure Marketplace

Core Azure architectural components

Regions

60+

Regions - not all accessible by everyone



Region Pairs

What are Paired Regions?

Each region has one other region which is treated as its “pair”

Almost always in the same geography - data storage laws

The data connection between region pairs is the highest speed available

Software rollouts are deployed to one region of a pair and the other is not touched

If multiple regions go down, one region of each pair is treated as a priority

Example Pairs

Canada Canada Central - Canada East

Europe North Europe - West Europe

USA East US - West US

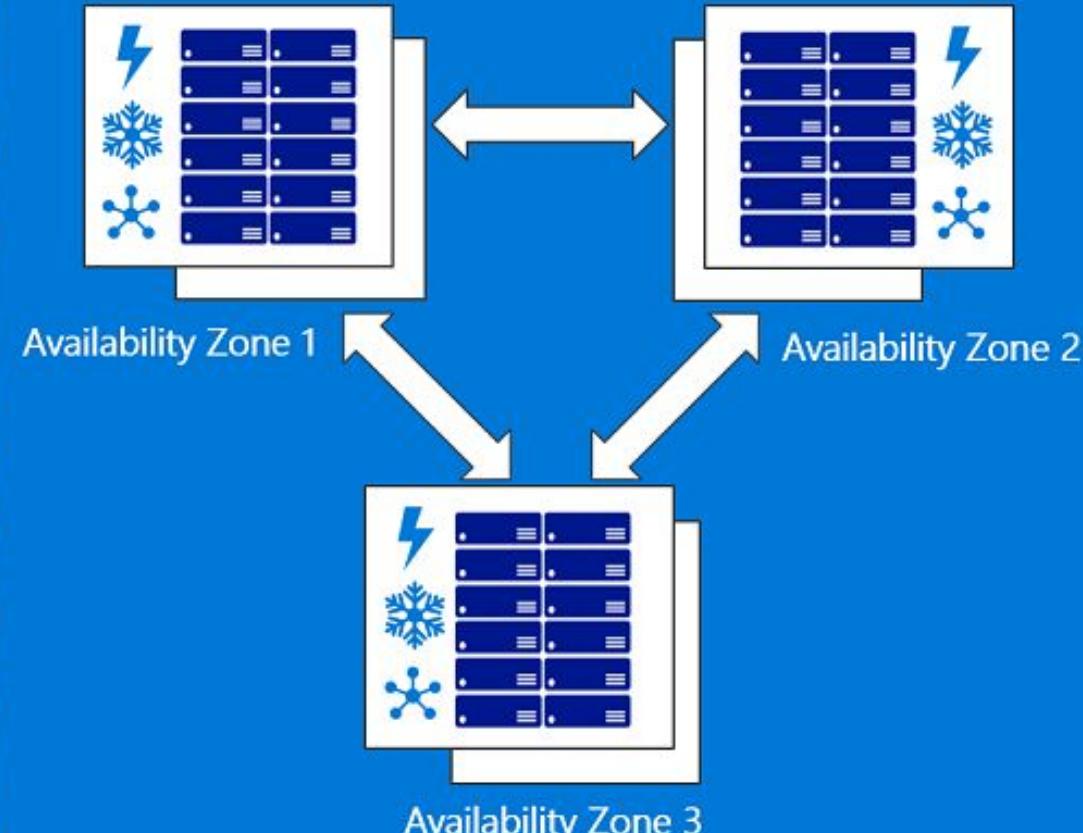
USA East US 2 - Central US

USA North Central US - South Central US

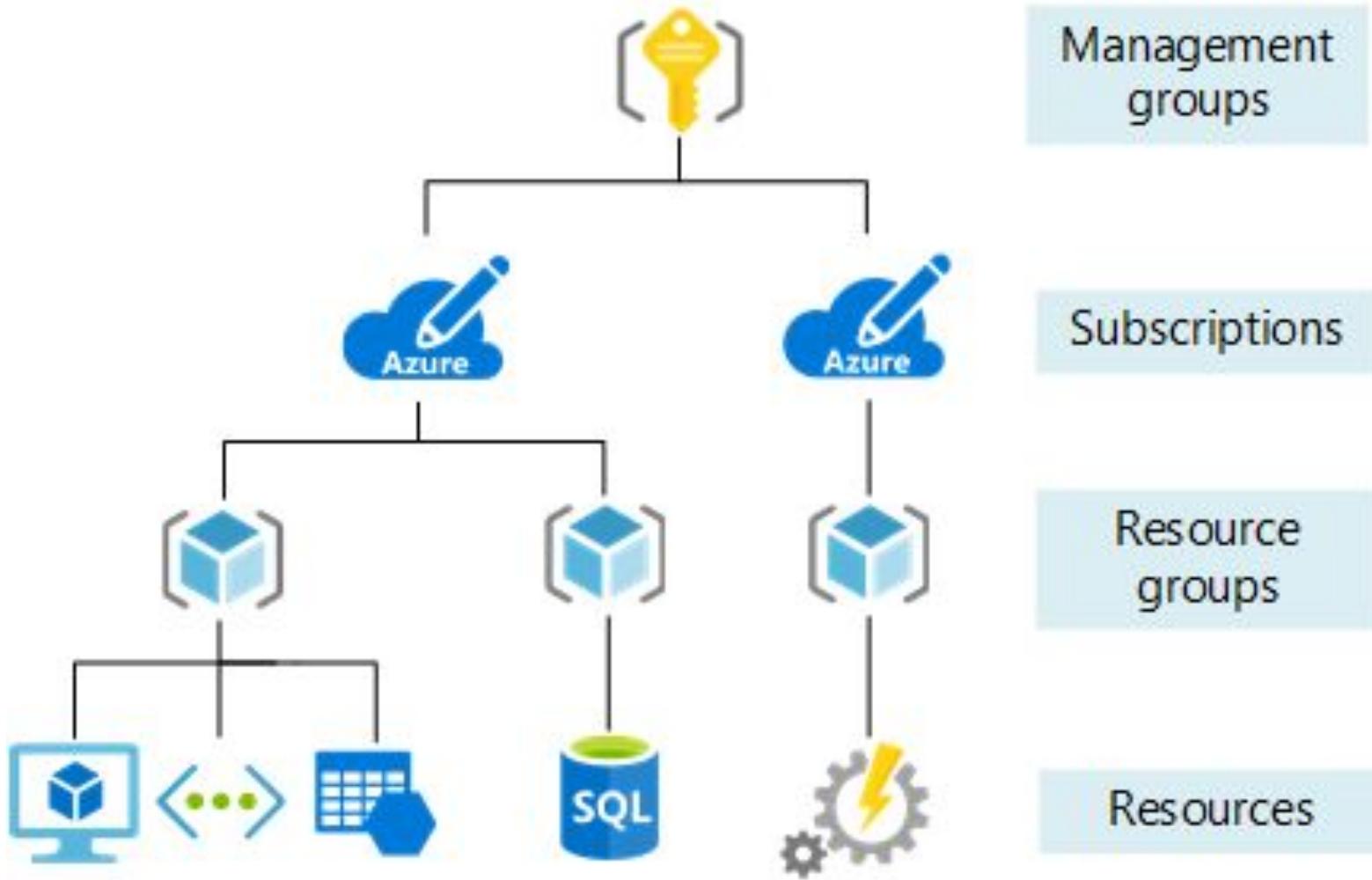
Brazil Brazil South - South Central US

Availability Zones

Azure Region



Resource Groups



Azure Subscription



Subscription is a
billing unit



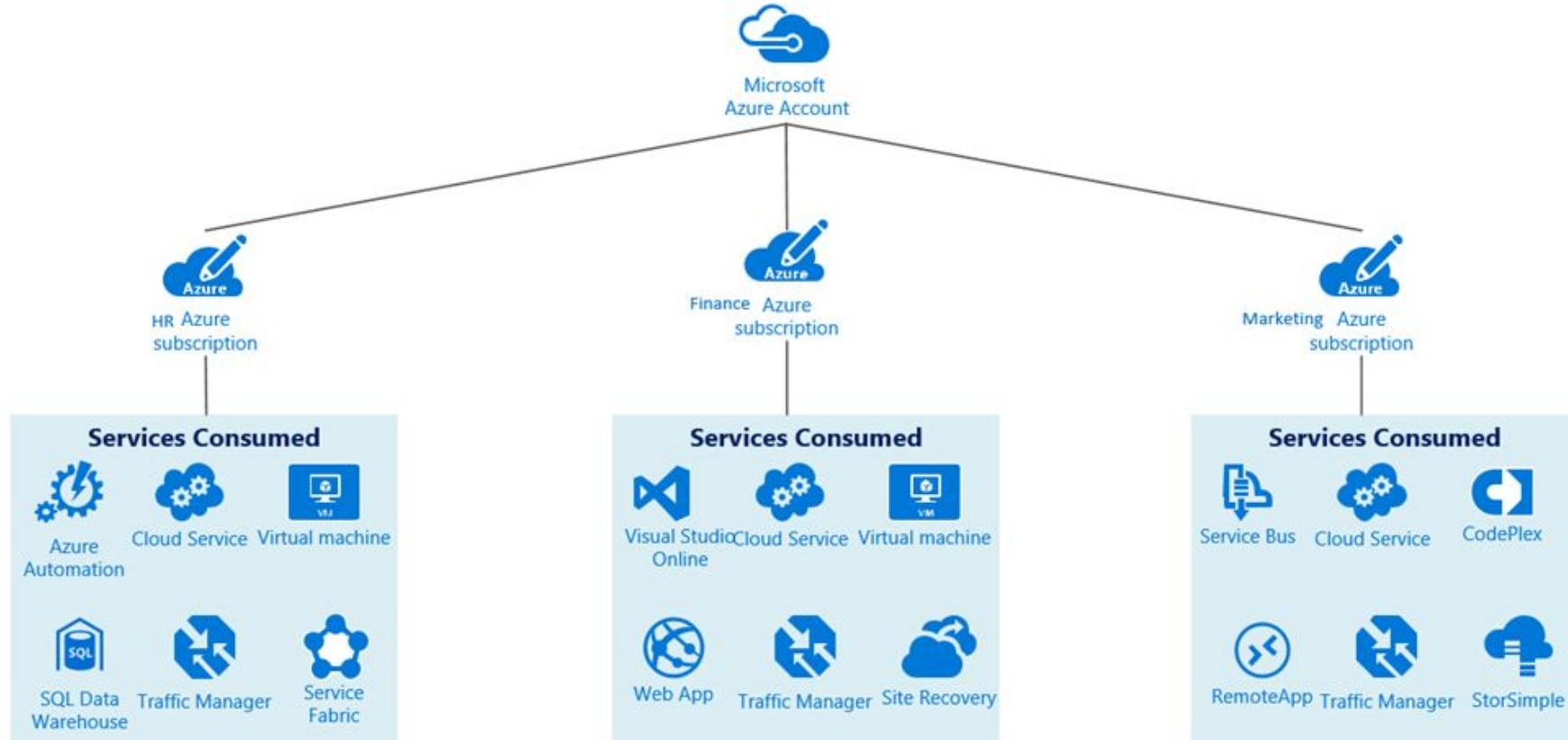
Users have access
to one or more
subscriptions, with
different roles



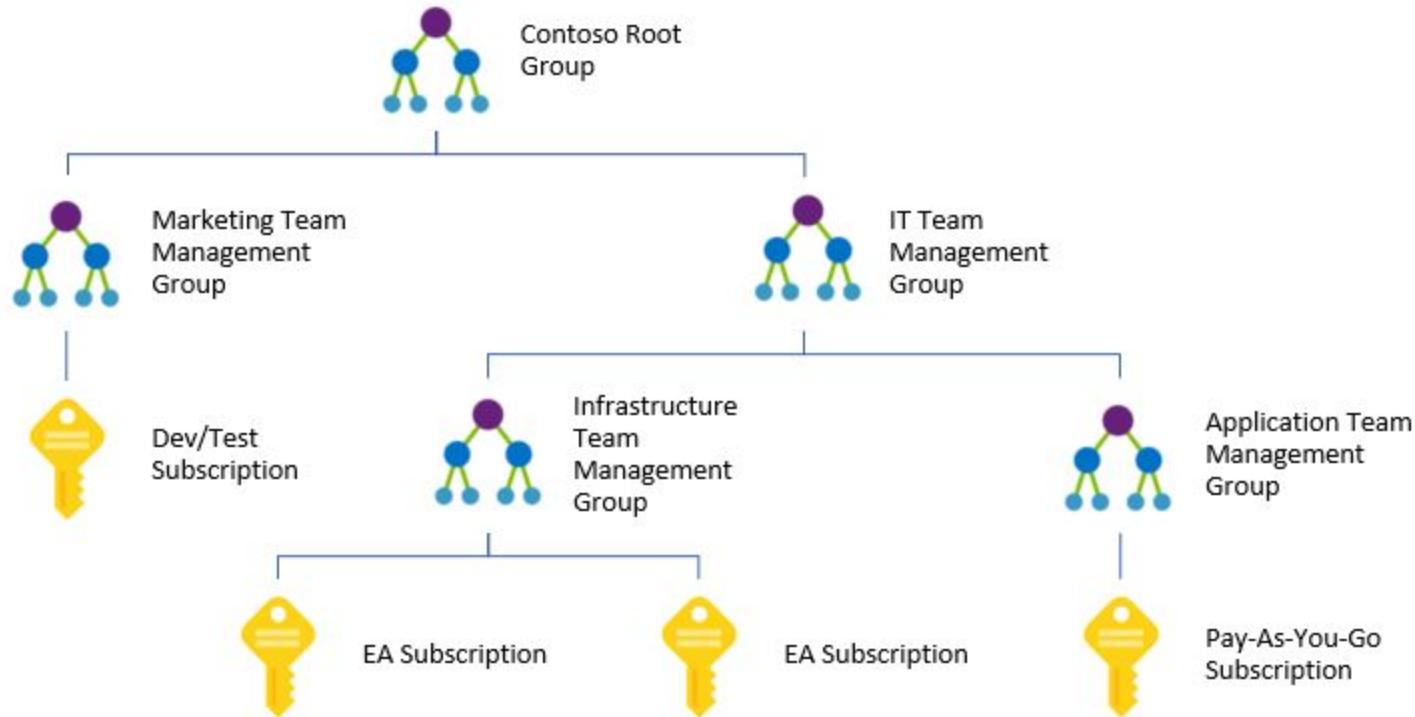
All resources
consumed by a
subscription will be
billed to the owner



Can be used to
organize resources
into completely
distinct accounts



Management groups



Azure Resource Manager (ARM)

Tools



AZURE RESOURCE MANAGER API

RESOURCE MANAGER



Cloud + On-Premises



ADFS
AAD

RESOURCE PROVIDER CONTRACT

Provider
REST Points

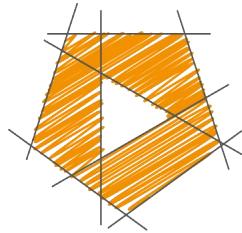


...

Azure Resources



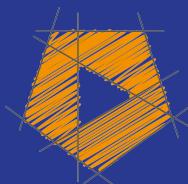
Instance of services
that you create, that
are yours to use



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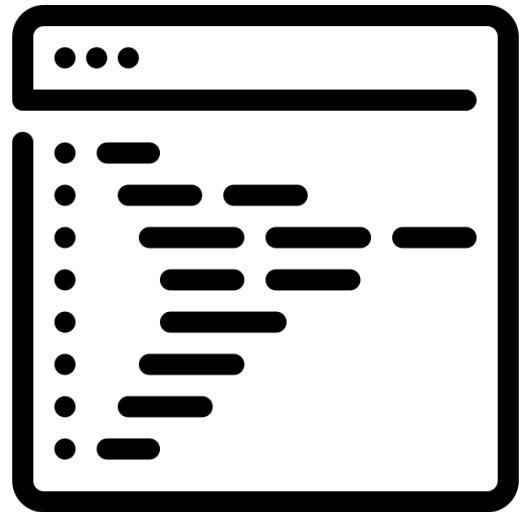
Core resources in Azure

Getting Deep into the Technical

- Compute services
- Networking services
- Storage services
- Database services
- Azure Marketplace

Compute services covered

- Virtual Machines (VM)
- App services (Web apps)
- Azure Container Instances (ACI)
- Azure Kubernetes Service (AKS)
- Windows Virtual Desktop



Created by KonKapp
from Noun Project



Compute -
“Executing code” in
the cloud

Virtual Machines

Infrastructure as a service - IaaS

Take an existing machine from your environment into the cloud - a copy

Windows or Linux operating systems - several of each

A “slice” of a physical machine shared with other customers

Full control over it, as if it was your machine

Virtual Machine Types

Over 200 to choose from

Number of CPU cores, CPU speed, RAM size, temporary disk size, IOPS, etc

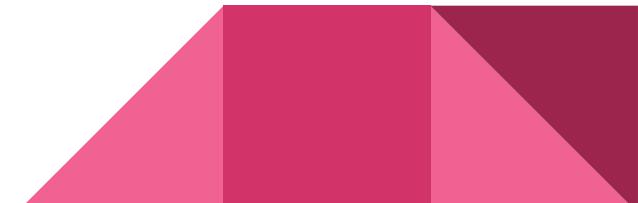
App Services

A new paradigm for running code in the cloud

Give your code and configuration to Azure, and they will run it

Promise of performance but no access to hardware

Platform as a Service (PaaS)



Containers

Another paradigm for running code in the cloud

Containers contain everything the app needs to run in a “container image”

Fastest and easiest to deploy

Azure Container Instance (ACI) - single instance, quickest way to deploy a container

Azure Kubernetes Service (AKS) - runs on a cluster of servers, enterprise-grade

Windows Virtual Desktop

Desktop version of Windows that runs in the cloud

Your software installed, your files - available from anywhere

Can even see your desktop on iOS and Android, or from any web browser

Runs on Azure

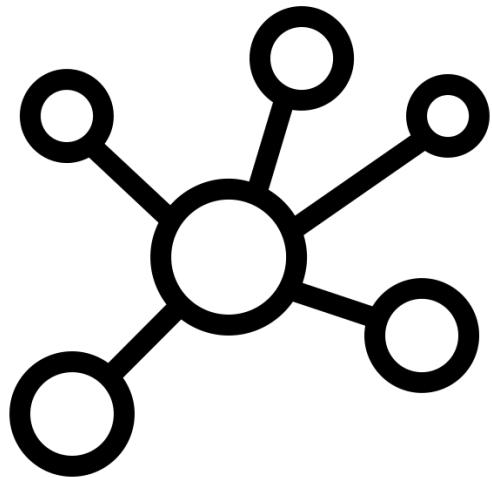
Networking Services Covered

Virtual Networks

VPN Gateway

VNet Peering

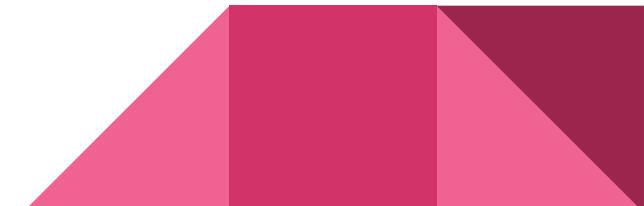
ExpressRoute



Created by Barracuda
from Noun Project

Types of Networking Services

- Connectivity Services
- Protection Services
- Delivery Services
- Monitoring Services



Connectivity

Virtual Network - emulating a physical network

Microsoft Global Network already exists, so a virtual network is just software configuration

Virtual Private Network (VPN) - connecting two networks as if they were on the same network, uses a Network Gateway

ExpressRoute - high-speed private connection to Azure

Protection - Security Section of the Course

DDos Protection - Distributed Denial of Service attack protection

Azure Firewall

Network Security Groups

Private Link

Delivery - Not on the Exam

Load Balancer - distribute traffic evenly between multiple backend servers

Application Gateway - a higher-level of load balancer with an optional firewall

Content Delivery Network (CDN) - stores common static files on the edge, closer to the users for (perceived) improved performance

Azure Front Door Service - a load balancer, CDN and firewall all-in-one

Monitoring - Management Tools Section of the Course

Network Watcher

ExpressRoute Monitor

Azure Monitor

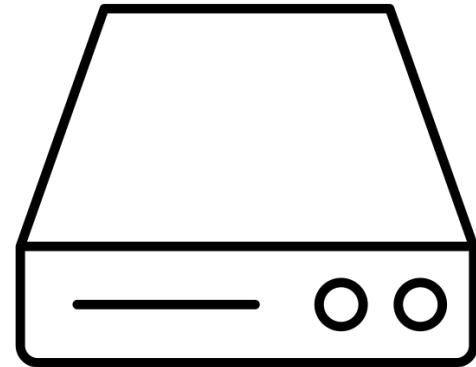
Storage Services Covered

Container (Blob) Storage

Disk Storage

File Storage

Storage Tiers



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from Noun Project



Storage - one of the
foundational
technologies on
which much is built

Container (Blob) and File Storage

The **Azure Storage** account

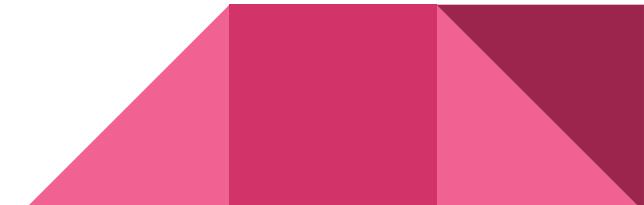
General Purpose v2 (gpv2) is the most common type

Blobs, Tables *, Queues *, Files

Azure Data Lake Storage Gen2

Cheapest type of storage

Pay Per GB (~1.8 cents per GB)



Many, Many Options

Access tiers - Hot, Cool, Archive

Performance tiers - Standard or Premium

Location

Redundancy / Replication

Failover options

Disk Storage

Azure Virtual Machine Disks

Managed Disks

Reserve capacity in advance

Optimized to virtual hard disks

Database Services Covered

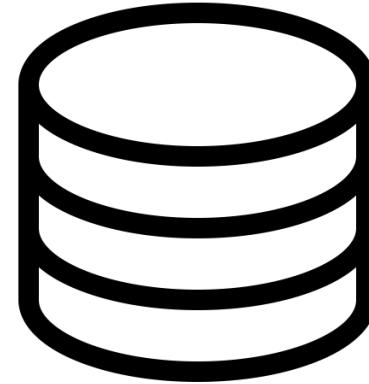
Cosmos DB

Azure SQL Database

Azure Database for MySQL

Azure Database for PostgreSQL

SQL Managed Instance



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from Noun Project



Most sophisticated
applications have
some type of
database

Cosmos DB

Extremely fast storage

Designed for modern applications such as mobile video games, social networks, and things requiring thousands of global replication

NoSQL Storage

Multi-modal

Supports many open-source APIs and protocols



Azure SQL Database

Runs on the SQL Server engine underneath

Relational DB

Database as a service

Easy to replicate

Easy to scale

Easy to migrate from SQL Server on-prem



Azure Database for MySQL

Managed MySQL database

Common open-source DB

Makes migration to the cloud easier if you rely on this one

Wordpress uses it

Azure Database for PostgreSQL

Managed PostgreSQL database

Open-source DB

Has better support for clusters and more complex server setups

Makes migration to the cloud easier if you rely on this one

SQL Managed Instance

Most compatible with existing SQL Server

Minimal code changes

Fully managed by Azure

Always up-to-date

Azure Marketplace

Marketplace X

- My Saved List 0
- Everything
- Compute
- Networking
- Storage
- Web
- Mobile
- Containers
- Databases
- Analytics
- AI + Machine Learning
- Internet of Things
- Integration
- Security
- Identity

Everything

Search Everything

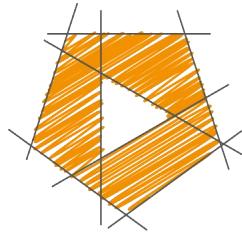
Pricing: All | Operating System: All | Publisher: All | More

What's new

 Azure Data Box Microsoft	 Red Hat Enterprise Linux 7.4 Red Hat	 Azure Databricks Microsoft	 Citrix Virtual Apps Essentials Citrix	 Barracuda WAF-as-a-Service Barracuda Networks, I	 Confidential Compute VM Microsoft Azure Comp
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Users interested in Function App also viewed

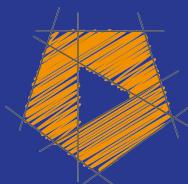
 Web App Microsoft	 Storage account - blob, file, table, Microsoft	 Logic App Microsoft	 Azure Cosmos DB Microsoft	 SQL Database Microsoft	 Template deployment Microsoft
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Describe Core Solutions and
Management Tools (10-15%)

Describe core solutions and management tools on Azure (10-15%)

Describe core solutions available in Azure

- describe the benefits and usage of Internet of Things (IoT) Hub, IoT Central, and Azure Sphere
- describe the benefits and usage of Azure Synapse Analytics, HDInsight, and Azure Databricks
- describe the benefits and usage of Azure Machine Learning, Cognitive Services and Azure Bot Service
- describe the benefits and usage of serverless computing solutions that include Azure Functions and Logic Apps
- describe the benefits and usage of Azure DevOps, GitHub, GitHub Actions, and Azure DevTest Labs

Describe Azure management tools

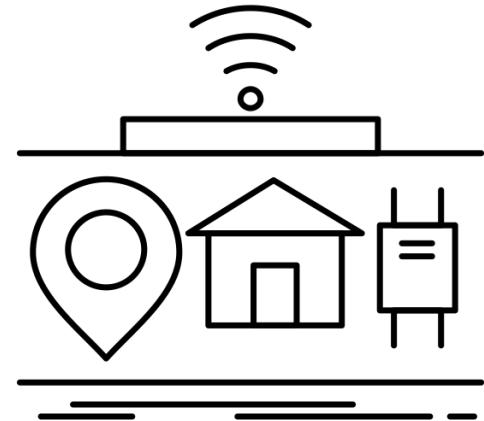
- describe the functionality and usage of the Azure Portal, Azure PowerShell, Azure CLI, Cloud Shell, and Azure Mobile App
- describe the functionality and usage of Azure Advisor
- describe the functionality and usage of Azure Resource Manager (ARM) templates
- describe the functionality and usage of Azure Monitor
- describe the functionality and usage of Azure Service Health

Internet of Things (IoT)

IoT Hub

IoT Central

Azure Sphere



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from Noun Project

Azure Sphere

A platform designed to work with connected devices

Includes:

- a secure, silicon chip
- Sphere OS
- Cloud-based security services

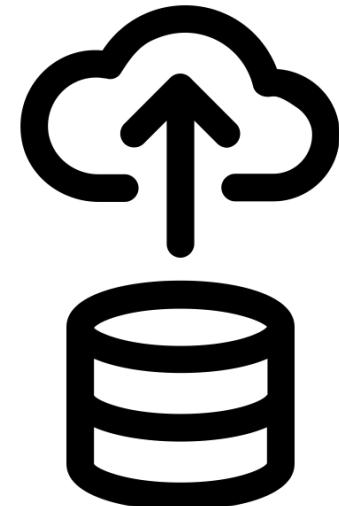


Big Data and Analytics

Azure Synapse Analytics
(formerly SQL Data Warehouse)

HDInsight

Azure Databricks



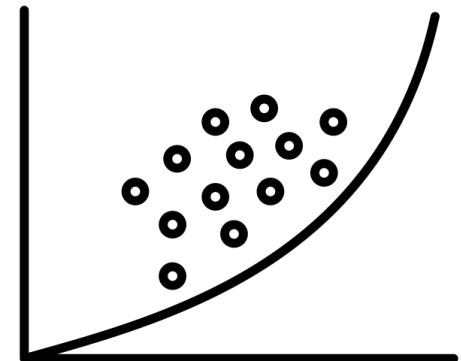
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Artificial Intelligence (AI)

Azure Machine Learning

Cognitive Services

Azure Bot Service



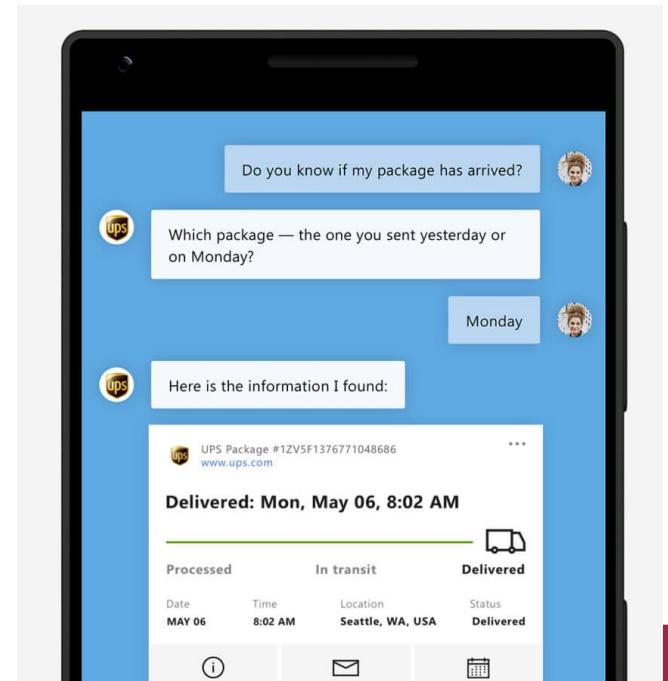
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Azure Bot Service

A natural language chatbot service

A database of frequently-asked questions

A front-end that allows people to ask questions
And get answers



Serverless

Azure Functions

Logic Apps

Event grid



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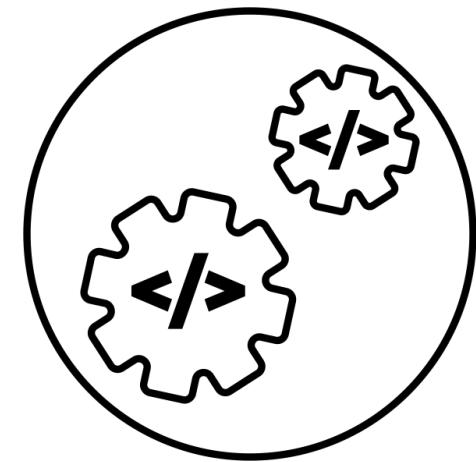
DevOps Solutions

Azure DevOps

GitHub

GitHub Actions

Azure DevTest Labs



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from Noun Project

GitHub

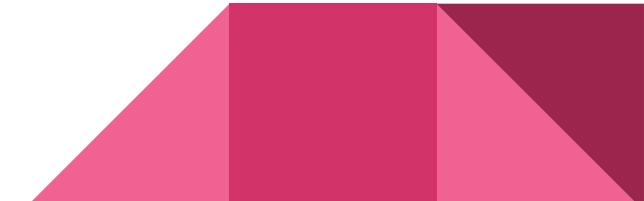
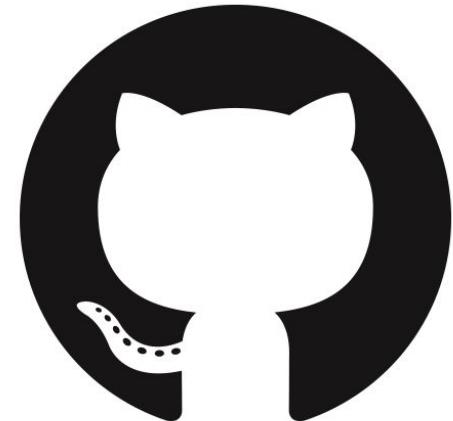
Microsoft purchased GitHub in 2018

The most popular place to store your company's source code

Has private and public options

Integrates with tools such as Visual Studio

Based on the “git” source control language invented by Linus Torvalds of Linux fame



GitHub Actions

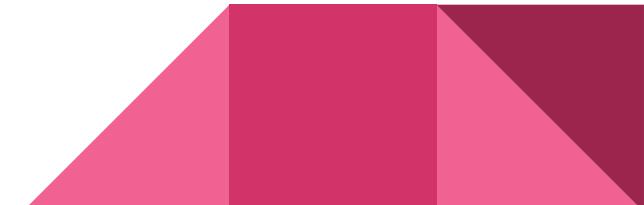
Automate software workflows

What happens once someone “checks in” changes to code?

Possibly includes Continuous Integration (CI)

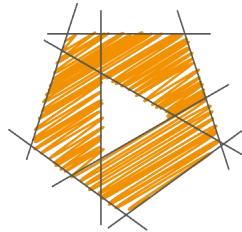
Possibly includes automatic compilation of code to check for errors

Possibly includes running a suite of tests against code





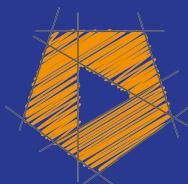
Having a Web App
automatically
update when new
code is checked in



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Azure Tools

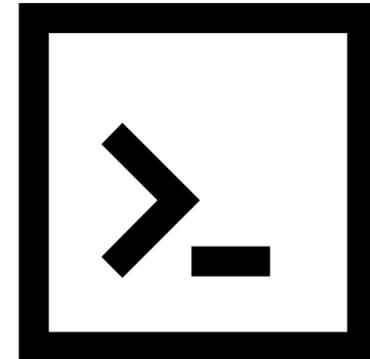
Azure CLI

PowerShell

Azure Portal

Azure Cloud Shell

Azure Mobile App



Created by Focus
from Noun Project

Azure Mobile App

Monitor the health and status of resources from your phone



Created by Eucalyp
from Noun Project



Run commands;
start, stop and
restart servers

Azure Advisor

Advisor recommendations

[Download as CSV](#) [Download as PDF](#) [Configure](#)

Subscriptions: 2 of 24 selected – Don't see a subscription? Switch directories

2 subscriptions

All types

Active

No grouping

Overview

High Availability (8)

Security (21)

Performance (1)

Cost (2)

All (32)

High Availability

8 Recommendations

1 High impact, 7 Medium impact, 0 Low impact

25 impacted resources

Security

21 Recommendations

21 High impact, 0 Medium impact, 0 Low impact

63 impacted resources

Performance

1 Recommendation

1 High impact, 0 Medium impact, 0 Low impact

1 impacted resource

2,876 USD savings/mo *

Cost

2 Recommendations

2 High impact, 0 Medium impact, 0 Low impact

11 impacted resources

Tips & tricks

- You can customize Advisor to process recommendations for resources that matter to you the most.
- You can optimize underutilized virtual machines to reduce your monthly Azure spend.
- You can improve the performance of your SQL Azure databases.
- You can enable virtual machine backup to protect your data from corruption or accidental deletion.



Download recommendations as PDF



Download recommendations as CSV

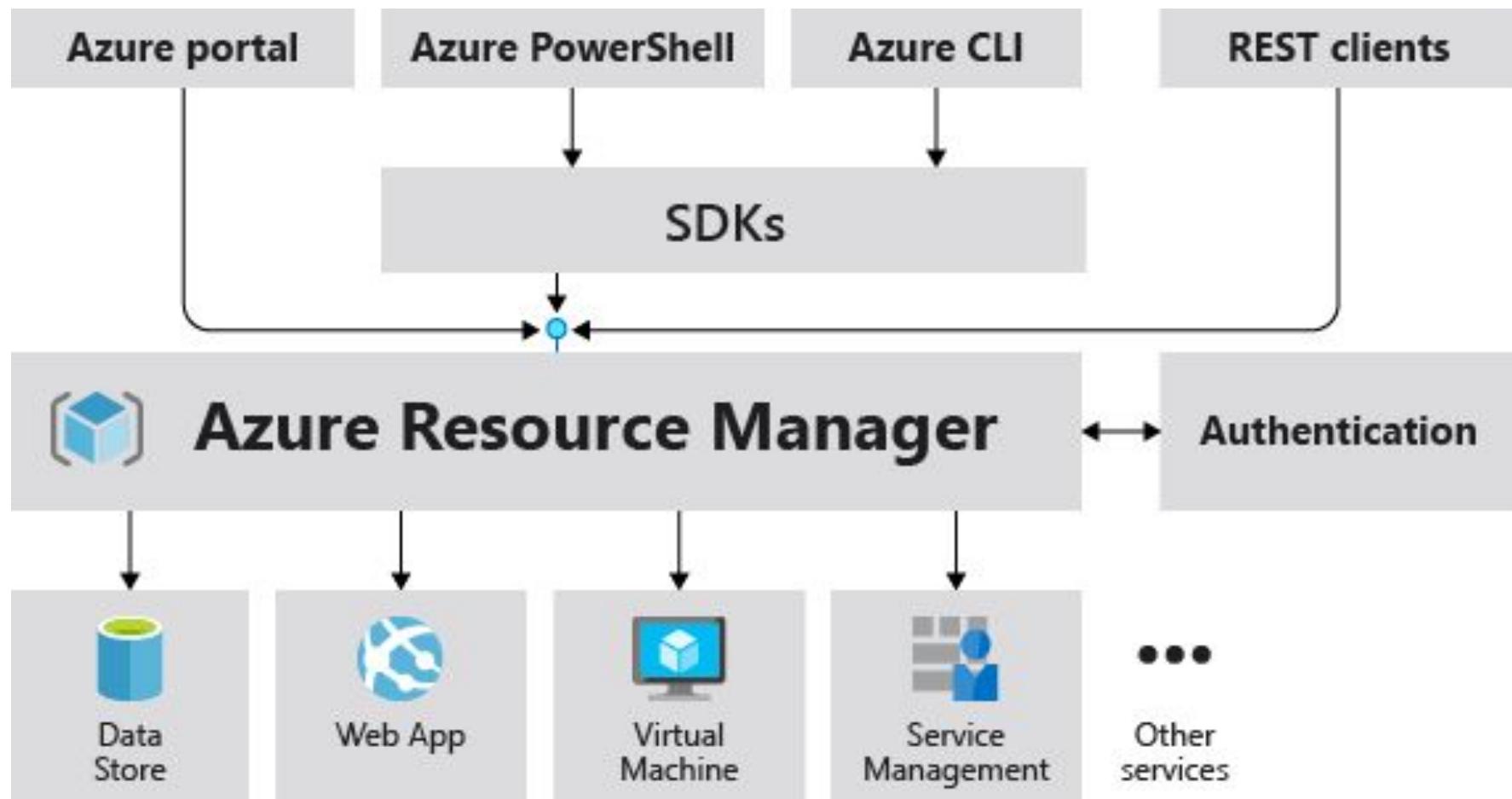
ARM Templates

Azure Resource Manager (ARM)

The deployment and management service for Azure

Management layer that allows you to create, update, and delete resources called
“deployments”

All actions that you take to manage your Azure resources goes through the ARM layer



```
"resources": [
    {
        "type": "Microsoft.Storage/storageAccounts",
        "apiVersion": "2019-06-01",
        "name": "[parameters('storageAccountName')]",
        "location": "[parameters('location')]",
        "sku": {
            "name": "Standard_LRS",
            "tier": "Standard"
        },
        "kind": "StorageV2",
        "properties": {
            "accessTier": "Hot"
        },
        "resources": [
            {
                "type": "blobServices/containers",
                "apiVersion": "2019-06-01",
                "name": "[concat('default/', parameters('containerName'))]",
                "dependsOn": [
                    "[parameters('storageAccountName')]"
                ]
            }
        ]
    }
]
```

```
"resources": [
    {
        "type": "Microsoft.Storage/storageAccounts",
        "apiVersion": "2019-06-01",
        "name": "[parameters('storageAccountName')]",
        "location": "[parameters('location')]",
        "sku": {
            "name": "Standard_LRS",
            "tier": "Standard"
        },
        "kind": "StorageV2",
        "properties": {
            "accessTier": "Hot"
        },
        "resources": [
            {
                "type": "blobServices/containers",
                "apiVersion": "2019-06-01",
                "name": "[concat('default/', parameters('containerName'))]",
                "dependsOn": [
                    "[parameters('storageAccountName')]"
                ]
            }
        ]
    }
]
```

Azure Monitor



Azure Monitor

Application

Operating System

Azure Resources

Azure Subscription

Azure Tenant

Custom Sources



Insights



Application



Container



VM



Monitoring
Solutions

Visualize



Dashboards



Views



Power BI



Workbooks

Analyze



Metric Analytics



Log Analytics

Respond



Alerts



Autoscale

Integrate



Logic Apps



Export APIs

Azure Service Health

Service Health - Service issues

Search (Ctrl+ /)

Select filter ...

Subscription

Pay-As-You-Go (Azure Courses)

Region

6 selected

Service

154 selected

ACTIVE EVENTS

Service issues

Planned maintenance

Health advisories

HISTORY

Health history

RESOURCE HEALTH

Resource health

ALERTS

Health alerts

Save filter

Delete filter

Pin filtered world map to dashboard

Create service health alert



No service issues found

See 1 resolved service issues in the last 24 hours, or see all past issues in the [health history](#).

Launch guided tour

Service Health - Health history

Subscription	Region	Health Event Type	Time Range			
Pay-As-You-Go (Azure Courses)	North Europe	Service issue	Last 24 hours			
Issue Name	Tracking ID	Event Type	Service(s)	Region(s)	Start Time	Update
Connectivity Issue - North Europe - RCA	V7KX-9BG	Incident	Network Infrastr...	North Europe	07:50 UTC, 05/22/2019	16 h ago

[Summary](#) [Issue updates](#) [Root cause analysis](#)

Last update (16 h ago)



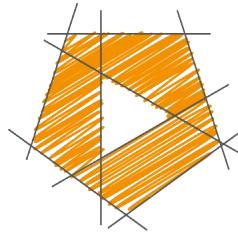
[Download the issue summary](#)

Summary of impact: Between 07:50 and 08:36 UTC on 22 May 2019, a subset of customers may have experienced connectivity issues when accessing Azure services in North Europe.

Root Cause: During this incident, approximately 12% of the network flows in or out of a single row of servers in a data center in North Europe would have failed.

Each row of servers in an Azure data center (DC) is connected to the DC network spine by eight routers. During this incident, one of the eight routers in a single row of a DC in North Europe began dropping all packets that it was expected to forward. Flows are spread over the eight routers, so flows sent to this one router would have been

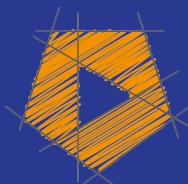
[Was this helpful?](#)



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Describe General and Network
Security Features (10-15%)

Describe general security and network security features (10-15%)

Describe Azure security features

- describe basic features of Azure Security Center, including policy compliance, security alerts, secure score, and resource hygiene
- describe the functionality and usage of Key Vault
- describe the functionality and usage of Azure Sentinel
- describe the functionality and usage of Azure Dedicated Hosts

Describe Azure network security

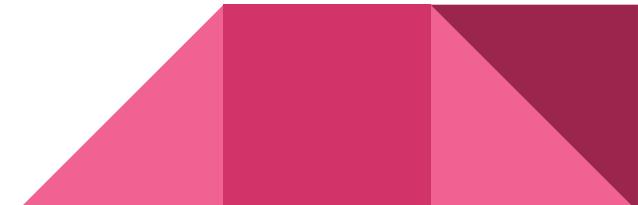
- describe the concept of defense in depth
- describe the functionality and usage of Network Security Groups (NSG)
- describe the functionality and usage of Azure Firewall
- describe the functionality and usage of Azure DDoS protection

Azure Security Center

Azure Security Center

Unified infrastructure security management system that monitors and protects your systems inside and outside of Azure

- Strengthen security
- Protect against threats
- Get secure faster



» Dashboard >



Dashboard >

Security Center | Overview

Showing subscription 'Pay-As-You-Go (Azure Courses)'



» Subscriptions

» What's new

Policy & compliance

Overall Secure Score



22% (~5 of 23 points)

[Review your Secure Score >](#)

Regulatory compliance

View and monitor your compliance posture relative to industry standards and regulations

[Enable Regulatory Compliance →](#)

Subscription coverage



Fully covered	0
Partially covered	1
Not covered	0

9 Covered resources

Regulatory compliance



View your compliance posture relative to the standards and regulations that are important to you. Remediate assessments to watch your compliance posture improve.

[Learn more >](#)

Resource security hygiene

Recommendations

High Severity
12

Resource health by severity



2 Compute & apps resources



Networking



3

Unhealthy resources



» Dashboard >



Security Center | Overview

Showing subscription 'Pay-As-You-Go (Azure Courses)'

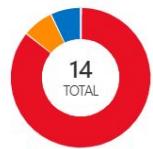


» Subscriptions

What's new

Resource security hygiene

Recommendations



8 Unhealthy resources

Resource health by severity



Networking



There are **1 high severity** recommendations to resolve.

[Secure your network resources](#)

Review and improve your Secure Score



Review and resolve security vulnerabilities to improve your Secure Score and secure your workload

[Learn more >](#)



Threat protection

Security alerts by severity

Security alerts over time

Most attacked resources

Key Vault



Central, secure repository for
your secrets, certificates and
keys

 Search (Ctrl+ /)

Generate/Import



Refresh



Restore Backup

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Settings

Keys

Secrets

Certificates

Access policies

NAME	TYPE	STATUS
A37CA50C-C519-4605-8A73-5F67...	Wrapped BEK	✓ Enabled
weather-service-api		✓ Enabled

Create a key

Options

Generate



* Name

Key Type

RSA EC

RSA Key Size

2048 3072 4096

Set activation date?

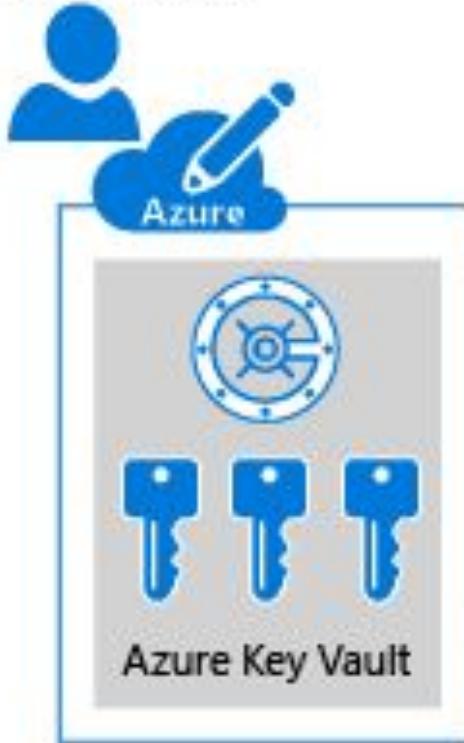
Set expiration date?

Enabled?

Yes No

NAME	THUMPRINT	STATUS	EXPIRATION DATE
COMPLETED			
azsjdsfc-cert	61D304B7D8692F0CDF120C2C940...	✓ Enabled	2/25/2020
newsfckey	395F068B7972B75D5F09C7C82D6...	✓ Enabled	2/25/2020
IN PROGRESS, FAILED OR CANCELLED			
There are no certificates available.			

Administrator with
Azure subscription
creates and manages
vault and keys



URIs for keys

Azure developer

Usage logging for keys

Security administrator

Azure Sentinel

What is Sentinel?

Centralizes all the log files from various resources

Analyzes them to detect threats

Allows you to run queries on those logs yourself

Investigate an incident

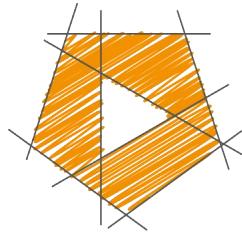
Orchestration and automation to fix the issues

Azure Dedicated Hosts



Hardware that is
dedicated to you
and only you

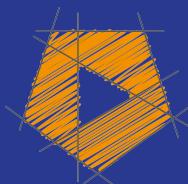
You can reserve a machine and run multiple virtual machines on it (to the machine limit)



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Defense in Depth

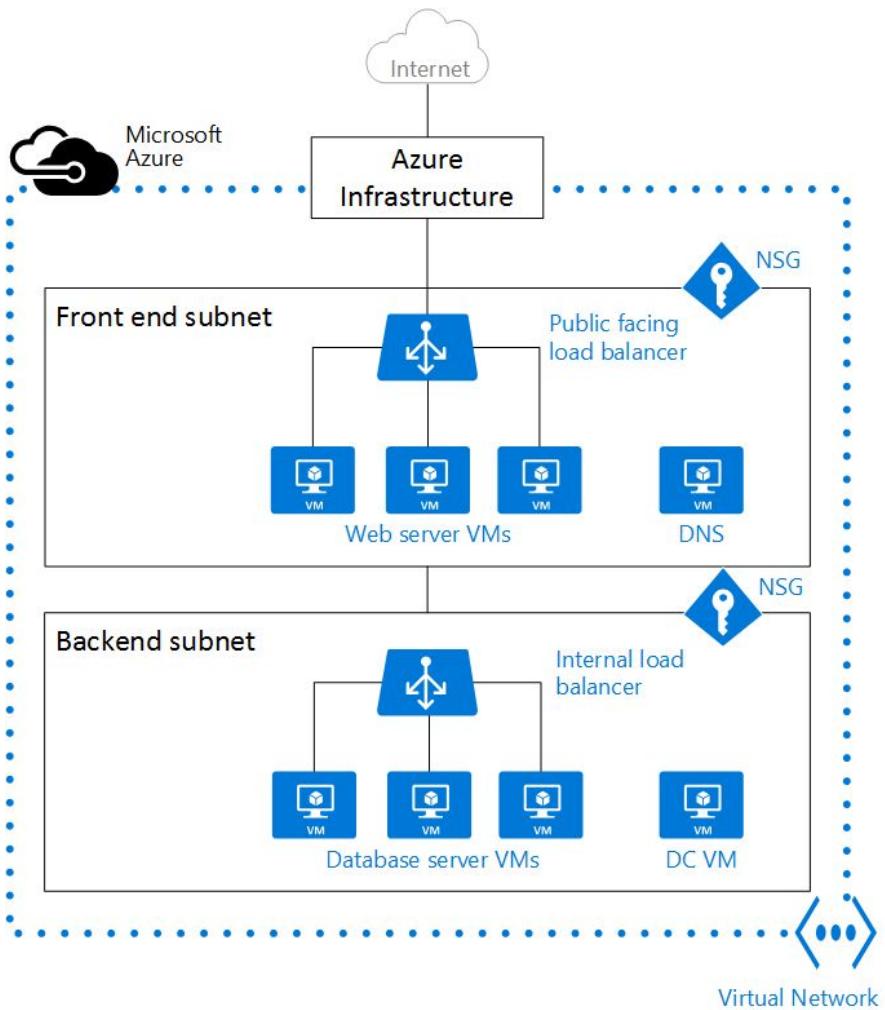
Security Layers

- Data - i.e. virtual network endpoint
- Application - i.e. API Management
- Compute - i.e. Limit Remote Desktop access, Windows Update
- Network - i.e. NSG, use of subnets, deny by default
- Perimeter - i.e. DDoS, firewalls
- Identity & access - i.e. Azure AD
- Physical - i.e. Door locks and key cards

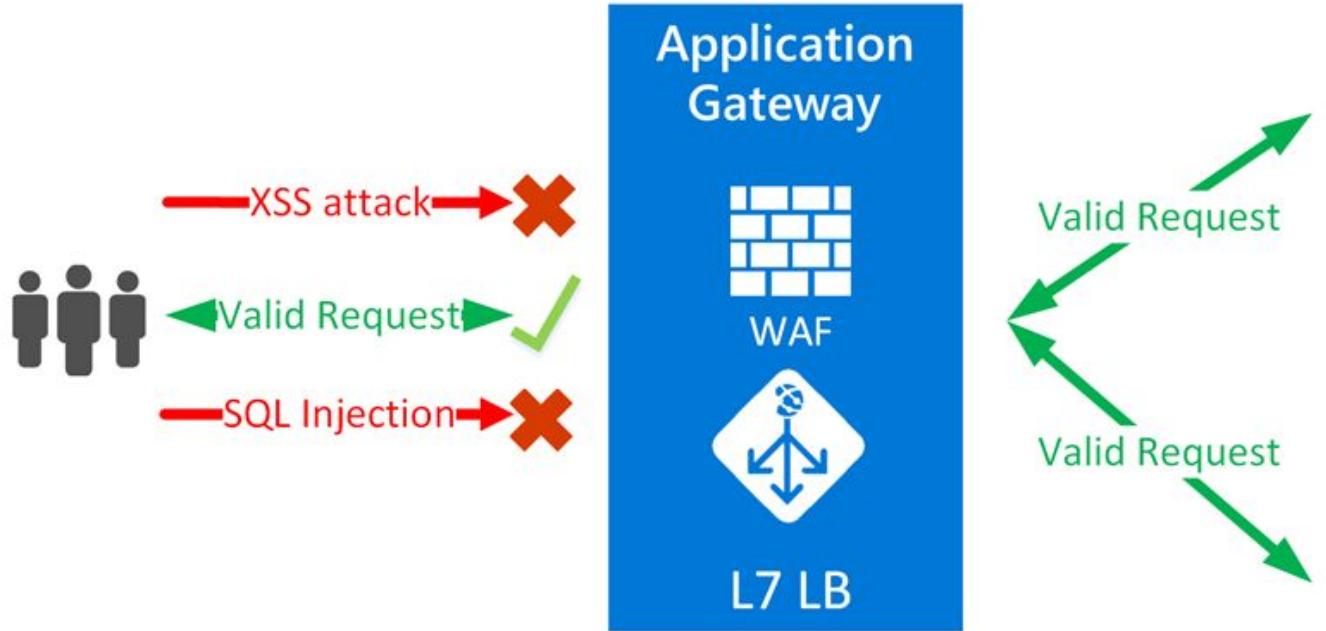
Defense in Depth

Identity & Access	Apps & Data Security	Network Security	Threat Protection	Security Management
Role-based access	Encryption	DDOS Protection	Antimalware	Log Management
Multifactor Authentication	Confidential Computing	NG Firewall	AI-Based Detection and Response	Security Posture Assessment
Central Identity Management	Key Management	Web App Firewall	Cloud Workload Protection	Policy and Governance
Identity Protection	Certificate Management	Private Connections	SQL Threat Protection	Regulatory Compliance
Privileged Identity Management	Information Protection	Network Segmentation	IoT Security	SIEM

Network Security Group (NSG)



Azure Firewall



Site2



Site1



Azure DDoS Protection



Basic



Standard

Feature



Always on monitoring



Automatic mitigation for L3/L4 attacks



L7 Protection with Application Gateway Web application firewall



Globally deployed



Protection policies tuned to your VNet

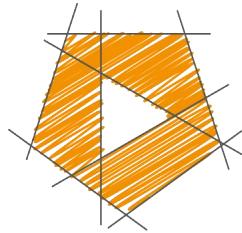


Logging, alerting, and telemetry



Resource cost scale protection

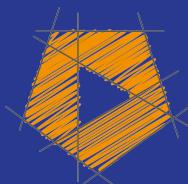




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Describe Identity, Governance,
Privacy, and Compliance Features
(20-25%)

Describe identity, governance, privacy, and compliance features (20-25%)

Describe core Azure identity services

- explain the difference between authentication and authorization
- define Azure Active Directory
- describe the functionality and usage of Azure Active Directory
- describe the functionality and usage of Conditional Access, Multi-Factor Authentication (MFA), and Single Sign-On (SSO)

Describe Azure governance features

- describe the functionality and usage of Role-Based Access Control (RBAC)
- describe the functionality and usage of resource locks
- describe the functionality and usage of tags
- describe the functionality and usage of Azure Policy
- describe the functionality and usage of Azure Blueprints
- describe the Cloud Adoption Framework for Azure

Describe privacy and compliance resources

- describe the Microsoft core tenets of Security, Privacy, and Compliance
- describe the purpose of the Microsoft Privacy Statement, Online Services Terms (OST) and Data Protection Amendment (DPA)
- describe the purpose of the Trust Center
- describe the purpose of the Azure compliance documentation
- describe the purpose of Azure Sovereign Regions (Azure Government cloud services and Azure China cloud services)



What is “Identity”?

In computing,
“identity” is a
representation of a
person, application
or device



Created by Humble_Bee
from Noun Project

Examples of Identity

John Henry Doe

johndoe@example.com

Monthly Payroll Application

The laser printer at 6th Floor West



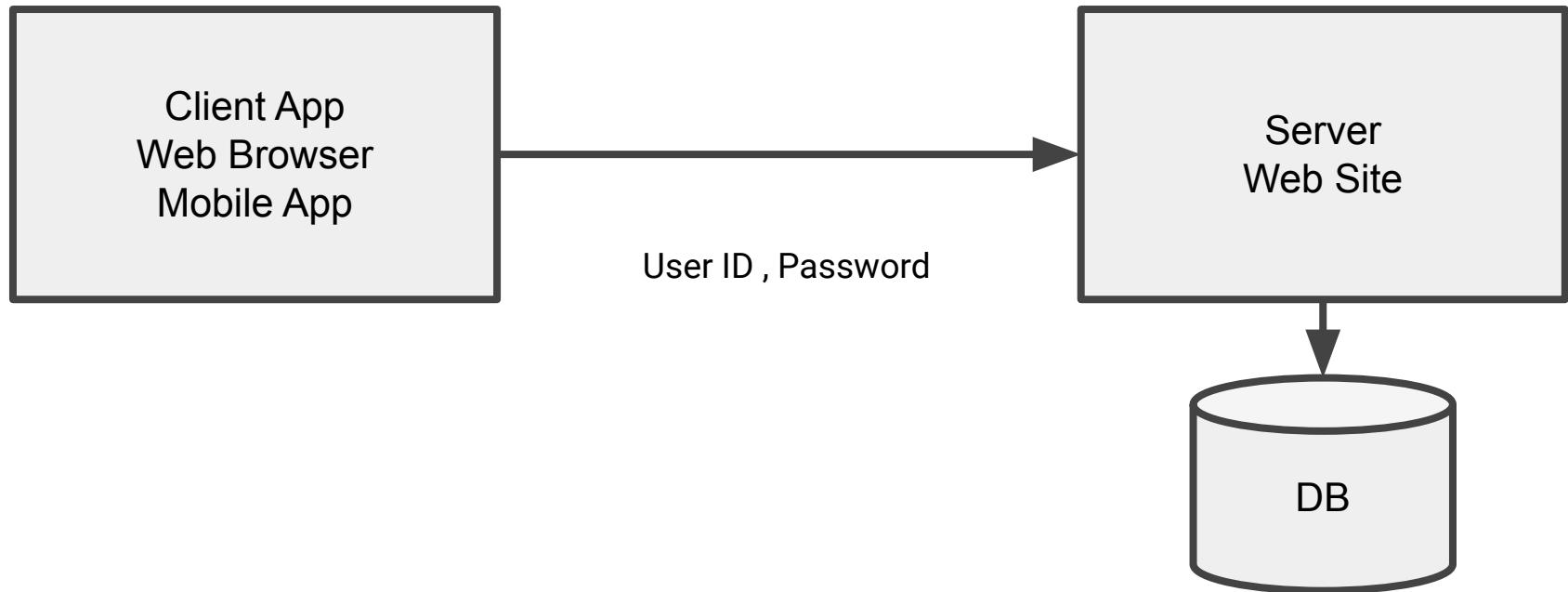
Usually requires a
password, a secret
key or a certificate
to prove



Many applications
require you to log in
to use some of its
functionality

How It's Traditionally Handled

Client-Server Model





Traditionally,
companies have
written their own
code to handle this

Some of the more famous “hacks” have been on custom created identity systems



Created by Peter van Driel
from Noun Project

Hacks

Some companies were storing the password in “plain text”

Some companies were using a simple, reversible hash algorithm (MD5)

Some companies were storing the “salt” along with the data

Not enforcing password change policies

Not enforcing password complexity policies



Azure provides an identity management system based on their popular “Active Directory”

Azure Active Directory (Azure AD or AAD)

Azure Active Directory

is not the same as

Active Directory



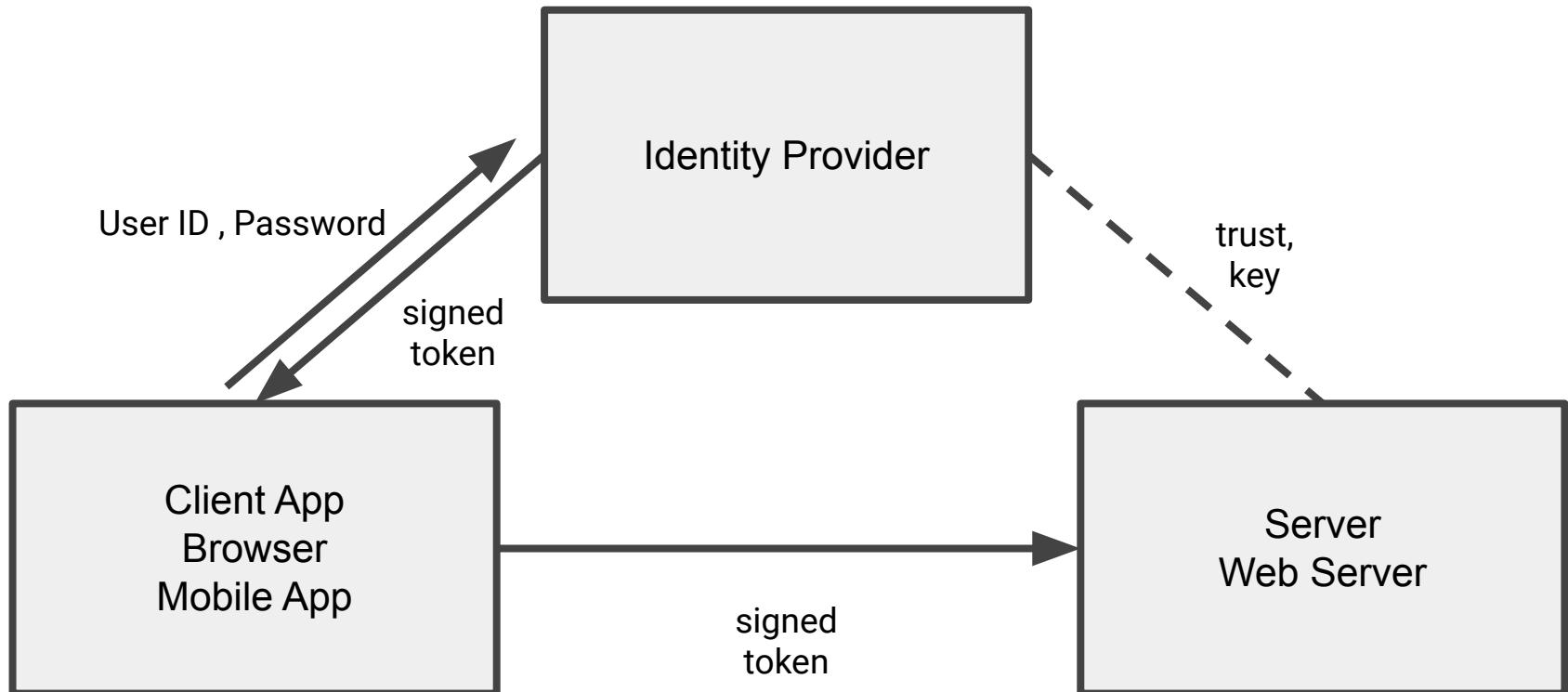
Traditional AD does
not work with
Internet protocols



Azure AD provides
“identity as a
service”

Instead of having to
write code to
handle users,
passwords,
password reset

The AAD Model





SAML OpenID WS Federation

Benefits of Azure AD

Security



Created by Peter van Driel
from Noun Project



Reduced
development time,
easier support



More features

Centralized administration



Only one user ID
and password

- Single Sign-On

Integration with other Azure services



The difference between Authentication and Authorization



Authentication is a user proving who they are - user id and password



Authorization is ensuring
that a user is permitted to
perform an action



Move away from all
authenticated users
having admin
access

Azure Active Directory



Microsoft's preferred solution for identity management

Azure AD Powers Other Microsoft Services

Azure

Skype

Outlook

OneDrive

Xbox

Office 365 - Teams, SharePoint, PowerBI, etc





Complete solution
for managing users,
groups, roles

Single-sign on



Synchronize with
your corporate AD

Conditional Access

User A attempts to log in to the app from within the company office, as she does every day



User B attempts to
log in to the app for
the first time in 4
months



Administrator C
attempts to log in
to the app from
their phone



Administrator D
attempts to log in
to the app from a
location 1200 miles
from the office



You can treat some access attempts as “routine”, and some as “not normal”



Signal

Decision

Enforcement

Azure Multi-Factor Authentication



Require 2 or more
pieces of evidence
(factors) in order to
log in

Three Factors

Something you **know** - i.e password

Something you **have** - i.e mobile phone, access to email account

Something you **are** - i.e fingerprint

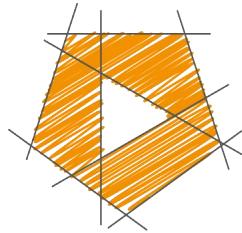


Your unique
password could be
1 piece of evidence

But a second piece
of evidence is
required - a unique,
time-limited code
sent to you



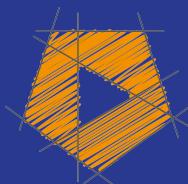
SMS, email,
authenticator app,
phone call



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Role-Based Access Control (RBAC)



Microsoft's preferred solution for access control



Create roles that
represent the
common tasks of
the job



Accountant
Developer
Business Lead



Assign granular
permissions to that
role



Assign users to
that role



Do not assign
granular permissions
to an individual



Reader
Contributor
Owner

Locks

Read Only Can Not Delete



Created by An Chi
from Noun Project



Search (Ctrl+ /)



Add



Resource group



Subscription



Refresh

Extensions

Continuous delivery (Preview)

Availability set

Configuration

Identity

Properties

Locks

Export template

Operations

Add lock

Lock name

dontdeleteme

Lock type

Delete

Notes

This is needed for production processes

OK

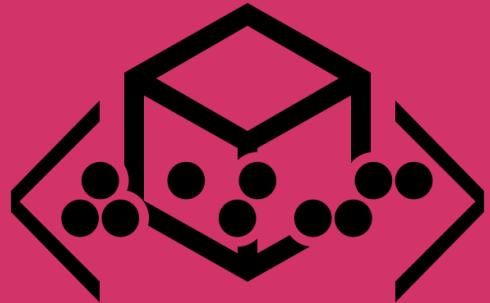
Cancel



Using RBAC, you
can restrict who
has access to locks

Resource Tags

Can add metadata to Azure resources



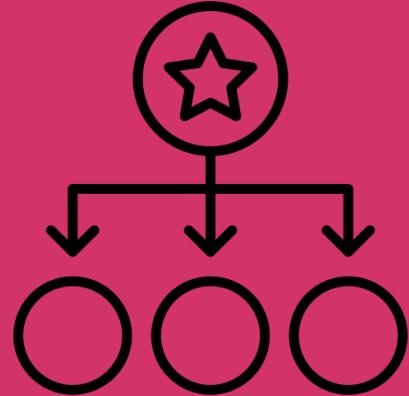
Created by Pascal Conil-lacoste
from Noun Project



Helps with billing
and support issues

Azure Policy

Governance



Created by Made x Made
from Noun Project



Create rules across
all of your Azure
resources

Evaluate compliance to those rules



Created by Shems Eddine Boukhatem
from Noun Project

Examples of Built-In Policies

- Require SQL Server 12.0
- Allowed Storage Account SKUs
- Allowed Locations
- Allowed Virtual Machine SKUs
- Apply tag and its default value
- Not allowed resource types



Can create custom
policies using JSON
definition

Azure Blueprints



Azure Subscription templates with Roles and Policies already defined

Cloud Adoption Framework for Azure

Microsoft Cloud Adoption Framework for Azure

The Cloud Adoption Framework is a collection of documentation, implementation guidance, best practices, and tools that are proven guidance from Microsoft designed to accelerate your cloud adoption journey.



GET STARTED
[Start your cloud journey](#)



DOWNLOAD
[Find cloud adoption tools and templates](#)



OVERVIEW
[What is the Cloud Adoption Framework](#)



WHAT'S NEW
[What's new in the Cloud Adoption Framework](#)

Cloud Adoption Framework guidance

This guidance aligns to the phases of the cloud adoption lifecycle, ensuring easy access to the right guidance at the right time.





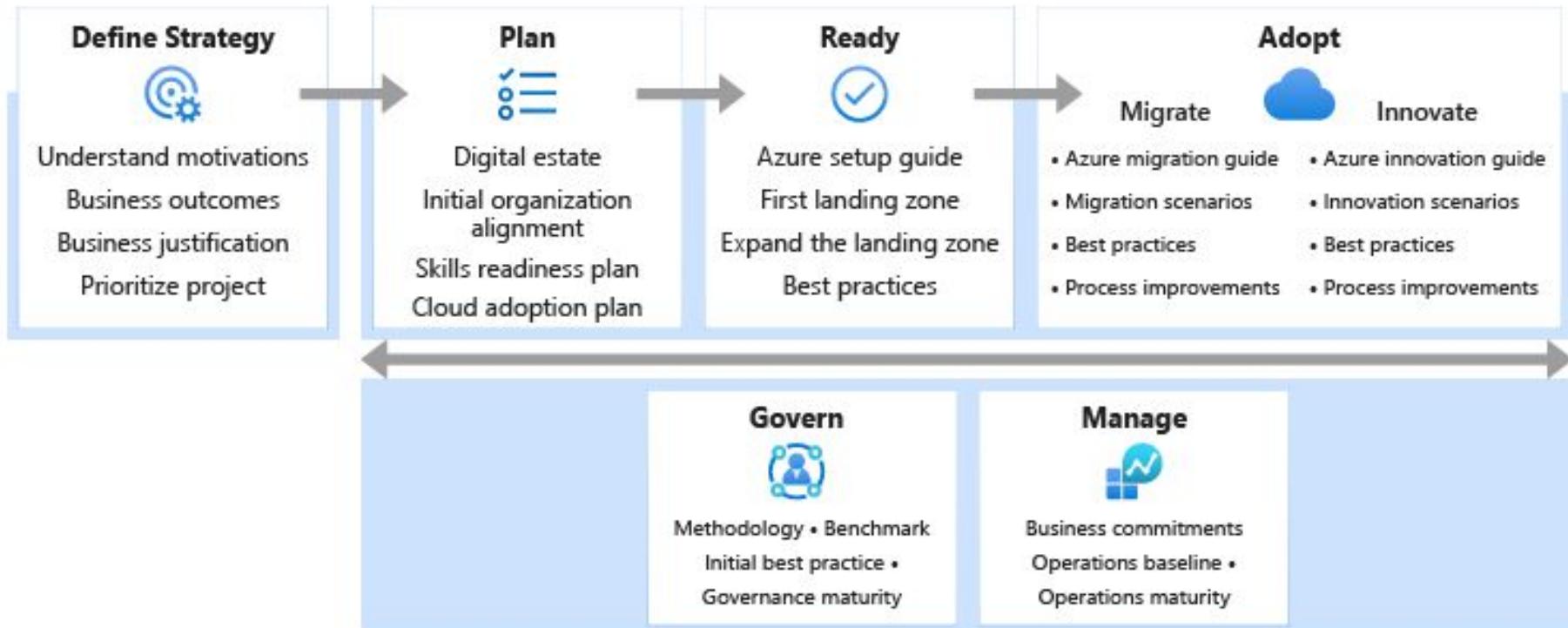
Set of
documentation,
guidance, tools



Best practices for succeeding in the cloud



Microsoft Cloud Adoption Framework for Azure



 Filter by title

Cloud Adoption Framework for
Azure

About the Framework

What's new

Get started

Overview

› Foundational alignment

Accelerate migration

Build new products and services

Unblock environment design and
configuration

Enable customer success

Deliver operational excellence

Manage cloud costs

Secure the enterprise
environment

Improve reliability

Ensure consistent performance

Align your organization

Build a cloud strategy team

Get started with the Cloud Adoption Framework

05/04/2020 • 2 minutes to read • 

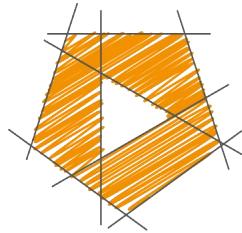
These common scenarios provide a roadmap through the Microsoft Cloud Adoption Framework for Azure. They can help you balance speed, innovation, and control by using an agile approach to start with a minimally viable solution. You can iterate on and improve that solution over time.

Scenario	Description
We need to understand the fundamental concepts around cloud adoption	If your journey involves the cloud, there are a few initial concepts to understand and decisions to make.
We want to migrate existing workloads to the cloud	This guide is a great starting point if your primary focus is migrating on-premises workloads to the cloud.
We want to build new products and services in the cloud	This guide can help you prepare to deploy innovative solutions to the cloud.
We're blocked by environment design and configuration	This guide provides a quick approach to designing and configuring your environment.
We need to ensure operational excellence during cloud transformation	The steps in this guide help the strategy team lead the organizational change

Is this page
helpful?

 Yes  No

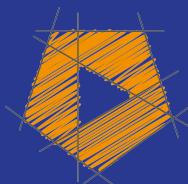
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Core Tenets of Security, Privacy and Compliance

Azure: Trusted Cloud

- Security
- Privacy
- Compliance
- Resiliency
- Intellectual Property (IP) protection

Security

- Azure is built with security in mind
- Azure delivers tools and technologies to help organizations protect applications and data
- Azure uses encryption
- Azure offers advanced tools to detect and defend against security threats

Privacy

- You own all your data in Azure
- Microsoft will not mine your data or use it for marketing
- You control where the data is located and who has access
- You can access your own data at any time for any reason
- Microsoft follows a specific policy for government and law enforcement requests
- Microsoft follows a specific policy to remove data if you discontinue using their service

Compliance

Microsoft follows international standards and helps customers to follow those standards too if they wish

Azure has more than 90 compliance certifications

Azure follows more than 50 regional standards

Azure can help with standards in more than 35 industries like health care, government, finance, etc.

Reliability and Resiliency

- High availability
- Disaster recovery
- Backup

Protecting IP

You can build your solutions on top of Azure's products and services

Azure offers specific protections against frivolous infringement claims

See: Azure IP Advantage and Shared Innovation Initiative

Microsoft Privacy Statement



privacy.microsoft.com

Microsoft Privacy Statement

[Expand All](#)[Print](#)

Last Updated: May 2019 [What's new?](#)

Your privacy is important to us. This privacy statement explains the personal data Microsoft processes, how Microsoft processes it and for what purposes.

Microsoft offers a wide range of products, including server products used to help operate enterprises worldwide, devices you use in your home, software that students use at school, and services developers use to create and host what's next. References to Microsoft products in this statement include Microsoft services, websites, apps, software, servers and devices.

Please read the product-specific details in this privacy statement, which provide additional relevant information. This statement applies to the interactions Microsoft has with you and the Microsoft products listed below, as well as other Microsoft products that display this statement.

Personal data we collect

How we use personal data

Reasons we share personal data

How to access and control your personal data

Cookies and similar technologies

Products provided by your organisation – notice to end users

Microsoft account

Other important privacy information 

Product-specific details:

Enterprise and developer products 

Productivity and communications products 

Search and artificial intelligence 

Windows 

Personal data we collect

Microsoft collects data from you, through our interactions with you and through our products. You provide some of this data directly, and we get some of it by collecting data about your interactions, use and experiences with our products. The data we collect depends on the context of your interactions with Microsoft and the choices that you make, including your privacy settings and the products and features that you use. We also obtain data about you from third parties.

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Online Service Terms (OST)

Product Terms

- Welcome
- Summary of Changes
- Universal License Terms
- For all Online Services**
 - For all Software
 - Online Services Privacy & Security Terms
 - Product Offerings
 - Software
 - Online Services

Licensing Information

- Glossary
- CAL and ML Equivalency Licenses
- Subscription License Suites
- Notices
- Professional Services

[Product Terms](#) > [Universal License Terms](#) > For all Online Services

For all Online Services

Introduction

The parties agree that these Online Services Terms govern Customer's use of the Online Services and that the DPA (defined in the [Glossary](#)) sets forth their obligations with respect to the processing and security of Customer Data and Personal Data by the Online Services. The parties also agree that, unless a separate Professional Services agreement exists, these Online Services Terms govern the provision of Professional Services, including but not limited to the terms in the [Professional Services](#) section and terms in the DPA for the processing and security of Professional Services Data and Personal Data in connection with that provision. Separate terms, including different privacy and security terms, govern Customer's use of Non-Microsoft Products (as defined below). In the event of any conflict or inconsistency between the DPA and any other terms in Customer's volume licensing agreement (including these terms), the DPA shall prevail.

Service Level Agreements

Most Online Services offer a Service Level Agreement (SLA). For more information regarding the Online Services SLAs, please refer to <http://microsoft.com/licensing/contracts>.

Applicable Online Services Terms and Updates

When Customer renews or purchases a new subscription to an Online Service, the then-current Online Services Terms will apply and will not change during Customer's subscription for that Online Service. When Microsoft introduces features, supplements or related software that are new (i.e., that were not previously included with the subscription), Microsoft may provide terms or make updates to the Online Services Terms that apply to Customer's use of those new features, supplements or related software.

Data Protection Addendum (DPA)

File Home Insert Design Layout References Mailings Review View Help Acrobat

Cut Copy Format Painter

Font Paragraph Styles Editing

Clipboard

Find Replace Select

Create and Share Request Signatures

Adobe Acrobat

Dictate Voice Sensitivity Editor

Volume
Licensing

Microsoft Online Services Data Protection Addendum Last updated July 21, 2020

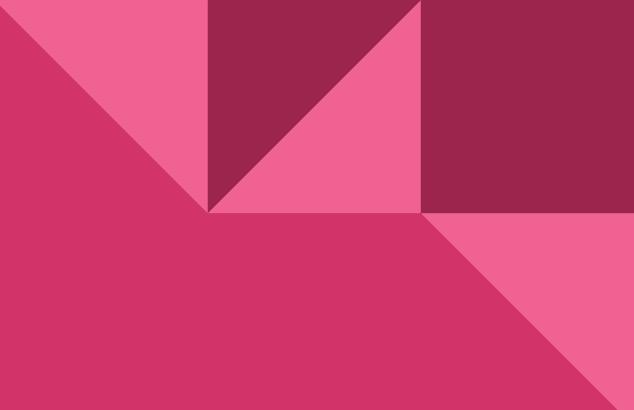
Published in English on July 21, 2020. Translations will be published by Microsoft when available. These commitments are binding on Microsoft as of July 16, 2020.

Microsoft Online Services Data Protection Addendum (Worldwide English, Last updated July 21, 2020)

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Trust center



[https://www.microsoft.com/en-us/trustcenter/c
loudservices/azure](https://www.microsoft.com/en-us/trustcenter/cloudservices/azure)



Microsoft Azure

Now you can take advantage of the latest security, privacy, and compliance features of Microsoft Azure. In this site, you'll learn about the trusted cloud, how your data is stored and accessed, and our comprehensive approach to securing your IT environment.

[Overview](#)[Security](#)[GDPR](#)

About Microsoft Azure

Microsoft Azure is a cloud computing platform that features a growing collection of integrated cloud services—analytics, computing, database, mobile, networking, storage, and web. Azure includes integrated tools, pre-built templates, and managed services that make it easier to build and manage enterprise, mobile, web, and Internet of Things (IoT) apps faster, using skills you have and technologies you already know.

We understand that some organizations are still wary about cloud computing; keeping data confidential is essential for any organization. That's why Microsoft has made an industry-leading commitment to the protection and privacy of your data. We were the first cloud provider recognized by the European Union's data protection authorities for our commitment to rigorous EU privacy laws. Microsoft was also the first major cloud provider to adopt the new international cloud privacy standard, [ISO 27018](#).

Azure safeguards customer data in the cloud and provides support for companies that are bound by extensive regulations regarding the use, transmission, and storage of customer data.

[Azure Security Documentation >](#)

Azure compliance



Privacy



Transparency



Azure Government



Azure industries



Get the information you need



Compliance terms such as GDPR,
ISO and NIST



Many different
standards for
technology across
the world



Microsoft claims to
be in compliance
with many of them



And has tools to
help you be in
compliance with
others

General Data Protection Regulation (GDPR)

GDPR is a new set of rules designed to give EU citizens more control over their personal data

Affects companies outside of the EU that handle EU citizen's data

Data has to be collected legally under strict conditions

Data has to be protected from misuse

Reporting obligations if data is mishandled

ISO - International Organization for Standardization

Certification	Azure	Azure Government
CSA STAR Certification	✓	✓ (new)
ISO 27001:2013	✓	✓ (new)
ISO 27017:2015	✓	✓ (new)
ISO 27018:2014	✓	✓ (new)
ISO 20000-1:2011	✓ (new)	✓ (new)
ISO 22301:2012	✓	✓
ISO 9001:2015	✓	



ISO 9001:2015 is
for Quality
Management
Systems (QMS)



ISO/IEC
20000-1:2011 is for
Service
Management
Systems (SMS)

NIST Cybersecurity Framework (CSF)

National Institute of Standards and Technology (NIST)

Audited for compliance to security and privacy processes



NIST Cybersecurity Framework (CSF)

Microsoft Cloud Services meet the National Institute of Standards and Technology (NIST) Cybersecurity Framework (CSF).

Microsoft and the NIST CSF

NIST Cybersecurity Framework (CSF) is a voluntary Framework that consists of standards, guidelines, and best practices to manage cybersecurity-related risks. Microsoft Cloud services have undergone independent, third-party FedRAMP Moderate and High Baseline audits and are certified according to the FedRAMP standards. Additionally, through a validated assessment performed by HITRUST, security and privacy standards development and accreditation organization, Office 365 is certified to the objectives specified in the NIST CSF.

Learn how to accelerate your NIST Cybersecurity Framework deployment with Compliance Manager and our Azure Security and Compliance Blueprint:

[Download the Azure Security and Compliance Blueprint - NIST CSF Risk Assessment Checklist](#) > [Learn more about the NIST CSF assessment for Office 365 in Compliance Manager](#) >

Azure Sovereign Regions

Separate account



For US government
agencies - federal,
state and local



Department of
Defense (DoD) has
its own too



Isolated data
centers separate
from the Azure
public cloud



Meets standards
specific to
government



FedRAMP, NIST
800.171 (DIB), ITAR,
IRS 1075, DoD L4,
and CJIS

portal.azure.us



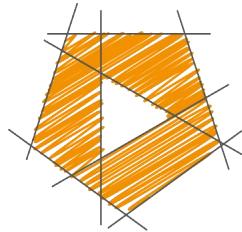
Different URLs for
connecting to
storage, functions,
etc.

Azure China

Separate account



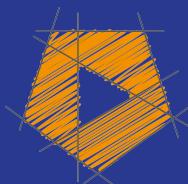
Data remains in
China



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AZ-900 Microsoft Azure Fundamentals

Scott Duffy, Instructor



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Describe Azure cost management
and Service Level Agreements
(10-15%)

Describe Azure cost management and Service Level Agreements (10-15%)

Describe methods for planning and managing costs

- identify factors that can affect costs (resource types, services, locations, ingress and egress traffic)
- identify factors that can reduce costs (reserved instances, reserved capacity, hybrid use benefit, spot pricing) Describe the functionality and usage of the Pricing calculator and the Total Cost of Ownership (TCO) calculator
- describe the functionality and usage of Azure Cost Management

Describe Azure Service Level Agreements (SLAs) and service lifecycles

- describe the purpose of an Azure Service Level Agreement (SLA)
- identify actions that can impact an SLA (i.e. Availability Zones)
- describe the service lifecycle in Azure (Public Preview and General Availability)

Factors affecting costs



Different services
are billed based on
different factors



Free services

Free services

Resource groups

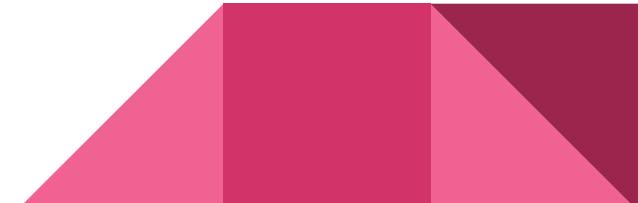
Virtual network (up to 50)

Load balancer (basic)

Azure Active Directory (basic)

Network security groups

Free-tier web apps (up to 10)



kWh



KILOWATT HOURS

68775-3

FM
TA 2S CL 200 240 V
30 Kh 7.2 3W 60Hz Type **MX**

76 548 902 0906

S ALL ADJ. F

FL

-546

Pay per usage (consumption model)

Opportunity for cost savings

Azure Functions:

- 1 million executions free per month
- \$0.20 per million executions
- Cheapest virtual machine is \$20 per month

Pay per usage services

Functions

Logic Apps

Storage (pay per GB)

Outbound bandwidth

Cognitive Services API



Pay for time (per second)



Created by Alvida Biersack
from Noun Project



Per second billing
means billing stops
when the VM is
stopped *

Stability in pricing

Pay a fixed price per month for computing power or storage capacity

Whether you use it or not

Discounts for 1-year or 3-year commitment in VM (Reserved Instances)

Multi-tenant or isolated environment



Pay for bandwidth



First 5 GB is free



Inbound data is free

Bandwidth costs

Outbound data, \$0.05 to \$0.087 / GB for Zone 1 (NA and EU w/o Germany)

Outbound data, \$0.057 to \$0.10 / GB for DE Zone 1 (Germany)

Outbound data, \$0.08 to \$0.12 / GB for Zone 2 (Asia, Africa and Oceania)

Outbound data, \$0.16 to \$0.181 / GB for Zone 3 (Brazil)

(Availability zone pricing is different)



1 PB of data
transfer = \$52,000



Best practices for minimizing Azure costs

Azure Advisor cost tab



Auto shutdown on dev/qa resources



Utilize cool/archive
storage where
possible

Reserved instances

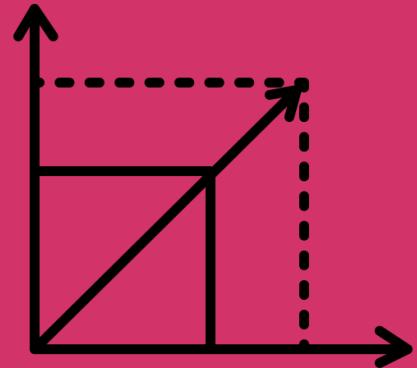


Configure alerts
when billing
exceeds an
expected level



Use Policy to
restrict access to
certain expensive
resources

Auto scaling resources

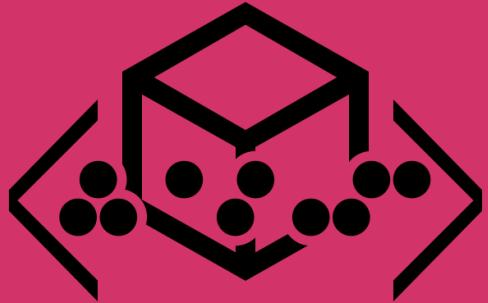


Created by Alla Zalewska
from Noun Project



Downsize when
resources
over-provisioned

Ensure every resource has an owner (tags)



Created by Pascal Conil-lacoste
from Noun Project

Spot Pricing



Ability to use virtual
machine when
nobody is using it
for a discounted
price



But when someone
needs to use it, you
get kicked off



Like a “last minute”
travel website



Or the “same day
tickets” window at a
Broadway show

Pricing calculator

<https://azure.microsoft.com/en-ca/pricing/calculator/>



Estimates are hard
to make 100%
accurate

Configurable Options

Region

Tier

Subscription Type

Support Options

Dev/Test Pricing





Export and share
the estimate

Total Cost of Ownership (TCO) calculator



The cost of a server
is more than just
the cost of the
hardware

Other costs

- Electricity
- Cooling
- Internet connectivity
- Rack space
- Setup labor
- Maintenance labor
- Backup

<https://azure.microsoft.com/en-ca/pricing/tco/calculator/>

Azure Cost Management



Another free tool
inside Azure to
analyze spending

»

Dashboard > Cost Management + Billing | Overview >

Pay-As-You-Go (Azure Courses) | Cost analysis

X



Search (Ctrl+/)

Save Save as Delete view Share Refresh Download Settings Try preview Help

Scope : Scott's Course Management Group

VIEW * Accumulated costs

Invoice (Azure) : Jul 7-Aug 6

Add filter

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Security

Events

Cost Management

Cost analysis

Budgets

Advisor recommendations

Billing

Invoices

External services

Payment methods

Partner information

ACTUAL COST (CAD ONLY) CA\$115.37

FORECAST UNAVAILABLE

BUDGET: AZBUDGET

--

CA\$100

Group by: None Granularity: Accumulated Area



Accumulated cost

Service name



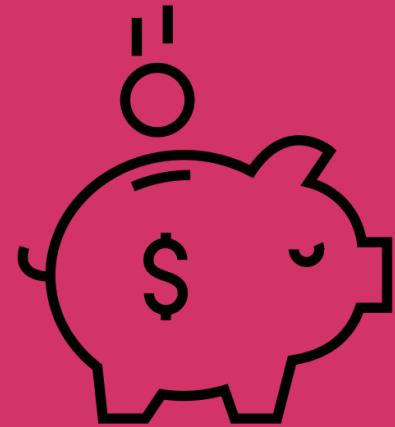
Location



Resource group name



Analyze spending over time



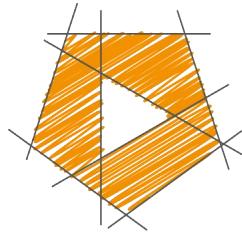
Created by VectorBakery
from Noun Project

Tracking against budgets



Created by Eucalyp
from Noun Project

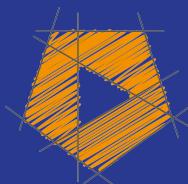
Schedule reports



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Service Level Agreement (SLA)

<https://azure.microsoft.com/en-ca/support/legal/sla/>

Service Level Agreements

Read the SLAs to learn about our uptime guarantees and downtime credit policies

The Service Level Agreement (SLA) describes Microsoft's commitments for uptime and connectivity. The SLA for individual Azure services are listed below.

 Search all products 

AI + Machine Learning	Internet of Things
Analytics	Management
Blockchain	Media
Compute	Migration
Containers	Mobile
Databases	Networking
Developer Tools	Storage

AI + Machine Learning

Create the next generation of applications using artificial intelligence capabilities for any developer and any scenario

Azure Bot Service
Intelligent, serverless bot service that scales on demand

Machine Learning Studio
Easily build, deploy, and manage predictive analytics solutions

Cognitive Services
Add smart API capabilities to enable contextual interactions

Microsoft Genomics
Power genome sequencing & research insights

Azure Machine Learning service
Bring AI to everyone with an end-to-end, scalable, trusted platform with experimentation and model management

SLA for Virtual Machines

Last updated: March 2018

- For all Virtual Machines that have two or more instances deployed across two or more Availability Zones in the same Azure region, we guarantee you will have Virtual Machine Connectivity to at least one instance at least 99.99% of the time.
- For all Virtual Machines that have two or more instances deployed in the same Availability Set, we guarantee you will have Virtual Machine Connectivity to at least one instance at least 99.95% of the time.
- For any Single Instance Virtual Machine using premium storage for all Operating System Disks and Data Disks, we guarantee you will have Virtual Machine Connectivity of at least 99.9%.

Introduction

General Terms

SLA details

Additional Definitions

"**Availability Set**" refers to two or more Virtual Machines deployed across different Fault Domains to avoid a single point of failure.

"**Availability Zone**" is a fault-isolated area within an Azure region, providing redundant power, cooling, and networking.

Preview features



Preview features
are for “testing” and
not production use



Could change
significantly before
it goes live



May not go live

Public and Private Preview



Public preview
available to
everyone



Private Preview
requires registration

Announcing private preview of Azure VM Image Builder

Posted on 26 September, 2018



Daniel Sol, Program Manager, Azure Compute

Today I am excited to announce the private preview of Azure VM Image Builder, a service which allows users to have an image building pipeline in Azure. Creating standardized virtual machine (VM) images allow organizations to migrate to the cloud and ensure consistency in the deployments. Users commonly want VMs to include predefined security and configuration settings as well as application software they own. However, setting up your own image build pipeline would require infrastructure and setup. With Azure VM Image Builder, you can take an ISO or Azure Marketplace image and start creating your own golden images in a few steps.

How it works

Azure VM Image Builder lets you start with either a Linux-based Azure Marketplace VM or Red Hat Enterprise Linux (RHEL) ISO and begin to add your own customizations. Your customizations can be added in the form of a shell script, and because the VM Image Builder is built on [HashiCorp Packer](#), you can also import your existing [Packer shell provisioner scripts](#). As the last step, you specify where you would like your images hosted, either in the [Azure Shared Image Gallery](#) or as an Azure Managed Image. See below for a quick video on how to create a custom image using the VM Image Builder.



Azure VM Image Builder – Private Preview Signup

Thank you for your interest in the Azure VM Image Builder. Please sign up for the private preview and we will get back to you.

* Required

1. Name *

Enter your answer

General Availability (GA)

Web Application Firewall (WAF) for Azure Front Door service is now generally available

Posted on May 31, 2019

Web Application Firewall (WAF) for Azure Front Door service is now generally available. Customers can use WAF to define security policies that allow, block, forward or rate limit access to their web applications delivered through Azure Front Door.

- A WAF security policy may consist of an ordered list of custom rules and Azure managed pre-configured rulesets.
- Custom rules are based on a combination of client IP addresses, geolocation, http parameters, request methods and size constraints.
- The pre-configured default rule set can be enabled to protect your applications from OWASP top 10 threats.
- New or updated WAF configurations are deployed globally within minutes, letting you respond quickly to changing attack patterns.
- WAF for Azure Front Door is integrated with Azure Monitor and the logs can be accessed through an Azure storage account, Azure Event Hub or Azure Log Analytics.

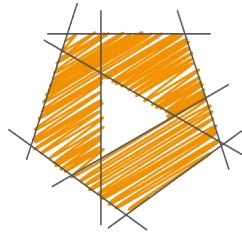
Along with the general availability of the service, we are also adding in preview a new Azure managed pre-configured ruleset, Bot Protection Ruleset, that can be enabled to block requests coming from malicious IPs based on Microsoft's threats intelligence data feeds.

For more details, see [WAF overview](#). To get started, follow [WAF configuration guide](#).

Related products



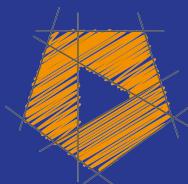
Azure Front Door Service



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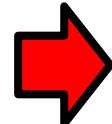


Thank you and best of luck!

Grab Your Free Resources

Located at the end of the course:

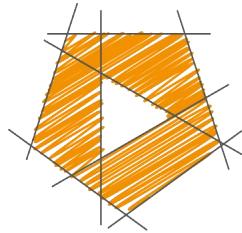
- Free PDF Study Guide
- Download the slides and MP3 audio
if you like to study offline
- 50 question practice test



Section 6: Thank You!
2 / 5 | 1min ^

- 23. Thank you!
 1min
- Practice Test 1: 50 Question Practice Test
- 24. Other Exam Resources
 1min
- 25. Course Resources - Study Guide, Slides, Audio
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- 26. BONUS Lecture - Discounts
 1min

Resources ▾



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