



Azure Application Development

Creating Applications for the Microsoft Cloud

May/2021



# Reza Salehi

Cloud Consultant and Trainer



@zaalion

**Microsoft**  
**CERTIFIED**  
*Trainer*  
*Alumni*



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# Questions & Resources

- Post questions in the QnA box
- Resources are in the course repository
  - <https://github.com/zaalion/oreilly-application-dev-azure>
- Reach out:
  - Twitter: [@zaalion](https://twitter.com/zaalion)



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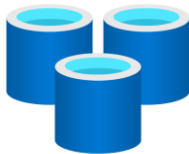
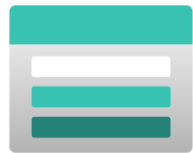
# Azure Application Development

- Azure Storage platforms
- Azure Application platforms
- Application and Data Security
- Implement Communications
- Azure VMs and Containers
- Logging and Monitoring



# Azure Storage Options

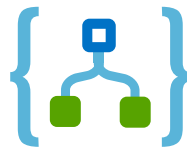
- Azure Storage Accounts
- Azure Cosmos DB
- Azure SQL Database
- Azure Cache for Redis



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# Azure Application Platforms

- Azure App Services
- Implement Serverless (Function Apps)
- Implement Serverless (Logic Apps)



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# Application and Data Security

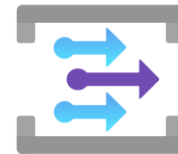
- Azure Active Directory App Registrations & Service Principals
- Implement Managed Identity (MSI)
- Azure Key Vault



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# Implement Communications

- Azure Storage Queues
- Service Bus Queues and Topics
- Event Hubs
- Event Grid





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# Azure VMs and Containers (IaaS)

- Azure compute using Azure VMs
- Implement containers in Azure (ACR, ACI, AKS)



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# Logging and Monitoring

- Alerts and Metrics
- Application Insights
- Azure Log Analytics Workspace



# Azure Storage Options

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# Azure Storage Accounts

- An Azure storage account contains blobs, files, queues, tables, and disks
- General-purpose v2 accounts (recommended)
- General-purpose v1 accounts
- BlobStorage accounts
- FileStorage accounts
- BlobStorage accounts



# Azure Storage Accounts Redundancy

- Locally redundant storage (LRS)
- Zone-redundant storage (ZRS)
- Geo-redundant storage (GRS)
- Geo-zone-redundant storage (GZRS)



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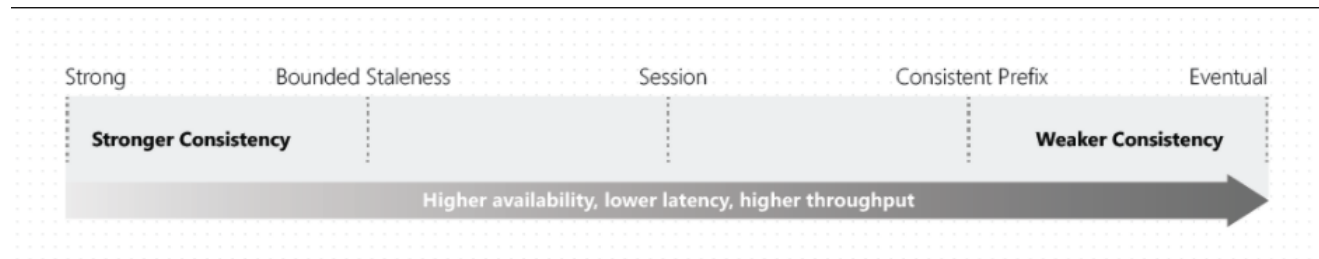
# Azure Cosmos DB

- Azure Cosmos DB is a fully managed NoSQL database for modern app development
- Azure Cosmos DB SQL API
- Azure Cosmos DB's API for MongoDB
- Azure Cosmos DB Cassandra API
- Azure Cosmos DB Gremlin API
- Azure Cosmos DB Table API



# Azure Cosmos DB Consistency

- Strong
- Bounded staleness
- Session
- Consistent prefix
- Eventual



# Azure Cosmos DB Multi-region Writes

Home > notebookaccount

notebookaccount | Replicate data globally

Search (Ctrl+J)

Save Discard Manual Failover Automatic Failover

Overview  
Activity log  
Access control (IAM)  
Tags  
Diagnose and solve problems  
Quick start  
Notifications  
Data Explorer

Settings

Features

Replicate data globally

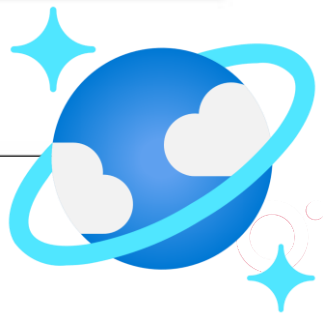
Default consistency

Click on a location to add or remove regions from your Azure Cosmos DB account.  
\* Each region is billable based on the throughput and storage for the account. [Learn more](#)

Configure regions  
Multi-region writes ☐  
Disable Enable

Configure the regions for reads, writes and availability zone (supported in selected regions and can only be configured when a new region is added). [+ Add region](#)

Regions	Reads Enabled	Writes Enabled	Availability Zone	Action
East US 2	✓	✓		
South Central US	✓	✓		





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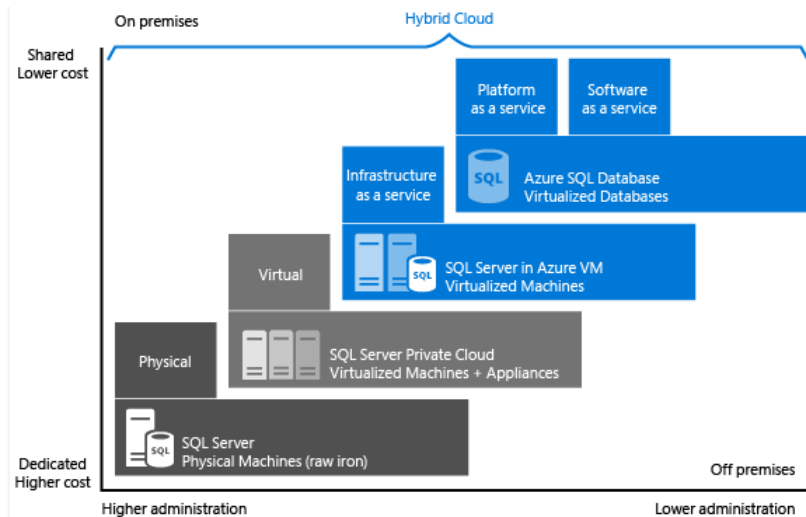
# Azure SQL (Database)

- Azure SQL is a family of managed, secure, and intelligent products that use the SQL Server database engine in the Azure cloud



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# Azure SQL (Database)

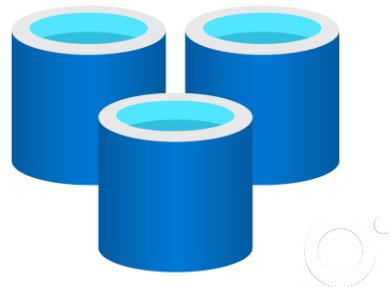
- Azure SQL Database offers the following deployment options:
- Single database
- Elastic pool



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# Azure Cache for Redis

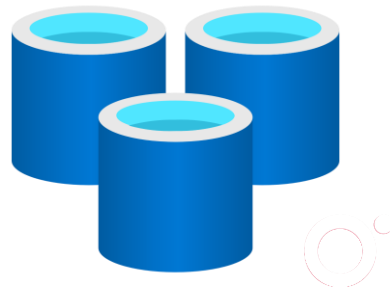
- Azure Cache for Redis provides an in-memory data store based on the Redis software.
- Basic
- Standard
- Premium
- Enterprise
- Enterprise Flash



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# Azure Cache for Redis SDKs

- Many frameworks including .NET
- Microsoft.Web.RedisSessionStateProvider (Store ASP.NET session state in the cache)
- Microsoft.Web.RedisOutputCacheProvider (Store ASP.NET page output in the cache)
- StackExchange.Redis (.NET Core)

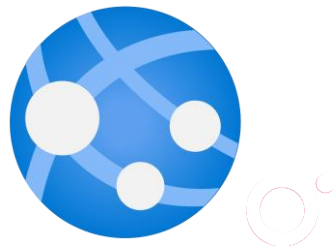


# Hosting Azure Applications

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# App Services

- Azure App Service is an HTTP-based service for hosting web applications, REST APIs, and mobile back ends
- Windows and Linux
- Shared compute
- Dedicated compute
- Isolated



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# Azure Functions

- Azure Functions is a serverless solution that allows you to host your applications in Azure
- Triggers, Input & output bindings
- Durable Functions is an extension of Azure Functions that lets you write stateful functions in a serverless compute environment.

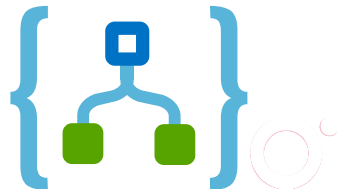




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# Azure Logic Apps

- A cloud service that helps you schedule, automate, and orchestrate tasks, business processes, and workflows when you need to integrate apps, data, systems, and services across enterprises or organizations.
- Has a visual designer, also use ARM-like syntax to develop



# Application and Data Security

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# Azure Active Directory

- Azure Active Directory (Azure AD) is Microsoft's cloud-based identity and access management service, which helps your employees sign in and access resources in:
  - External resources, such as Microsoft 365
  - Internal resources, such as apps on your corporate network and intranet



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# Managed Identity

- Is an Azure Active Directory (Azure AD) service
- Managed identities eliminate the need for developers to manage credentials. (App id, secrets, tenant ids, etc.)
- Managed identities provide an identity for applications to use when connecting to resources that support Azure Active Directory (Azure AD) authentication



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# Azure Key Vault

- Azure Key Vault helps securely store secret, keys and certificates in Azure
- Secrets Management (tokens, passwords,, API keys, and other secrets)
- Key Management (encryption keys used to encrypt your data)
- Certificate Management (private Transport Layer Security/Secure Sockets Layer (TLS/SSL) certificates)



# Implement Communications

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# Azure Storage Queues

- A service for storing large numbers of messages
- A queue message can be up to 64 KB in size
- FIFO is intended but not guaranteed



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# Service Bus Queues and Topics

- Azure Service Bus supports a set of cloud-based, message-oriented middleware technologies including reliable message queuing and durable publish/subscribe messaging.
- Queues (single receiver)
- Topics (multiple subscribers)

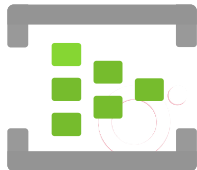




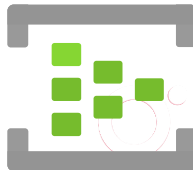
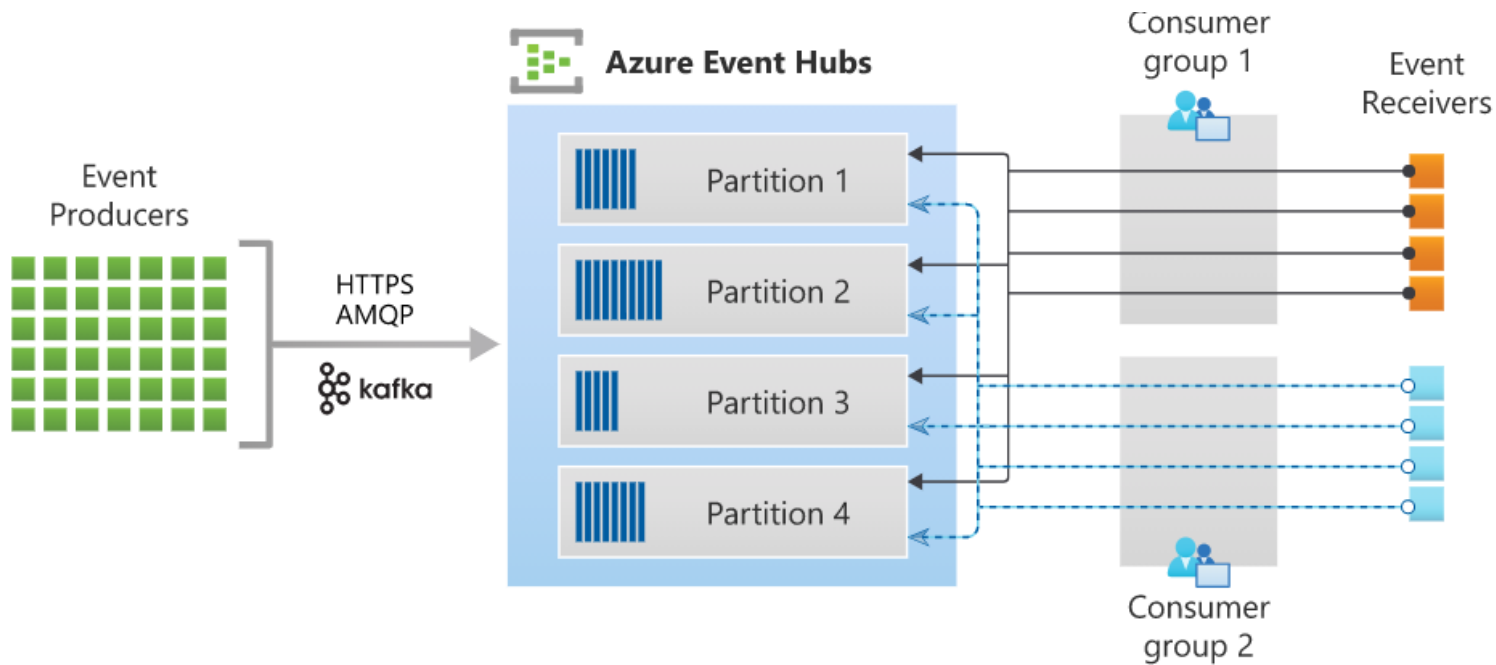
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# Azure Event Hubs

- Azure Event Hubs is a big data streaming platform and event ingestion service.
- Anomaly detection (fraud/outliers)
- Application logging
- Transaction processing
- User telemetry processing
- Device telemetry streaming
- Etc.



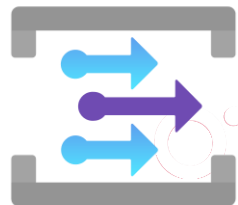
# Azure Event Hubs



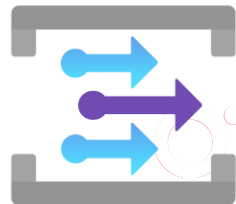
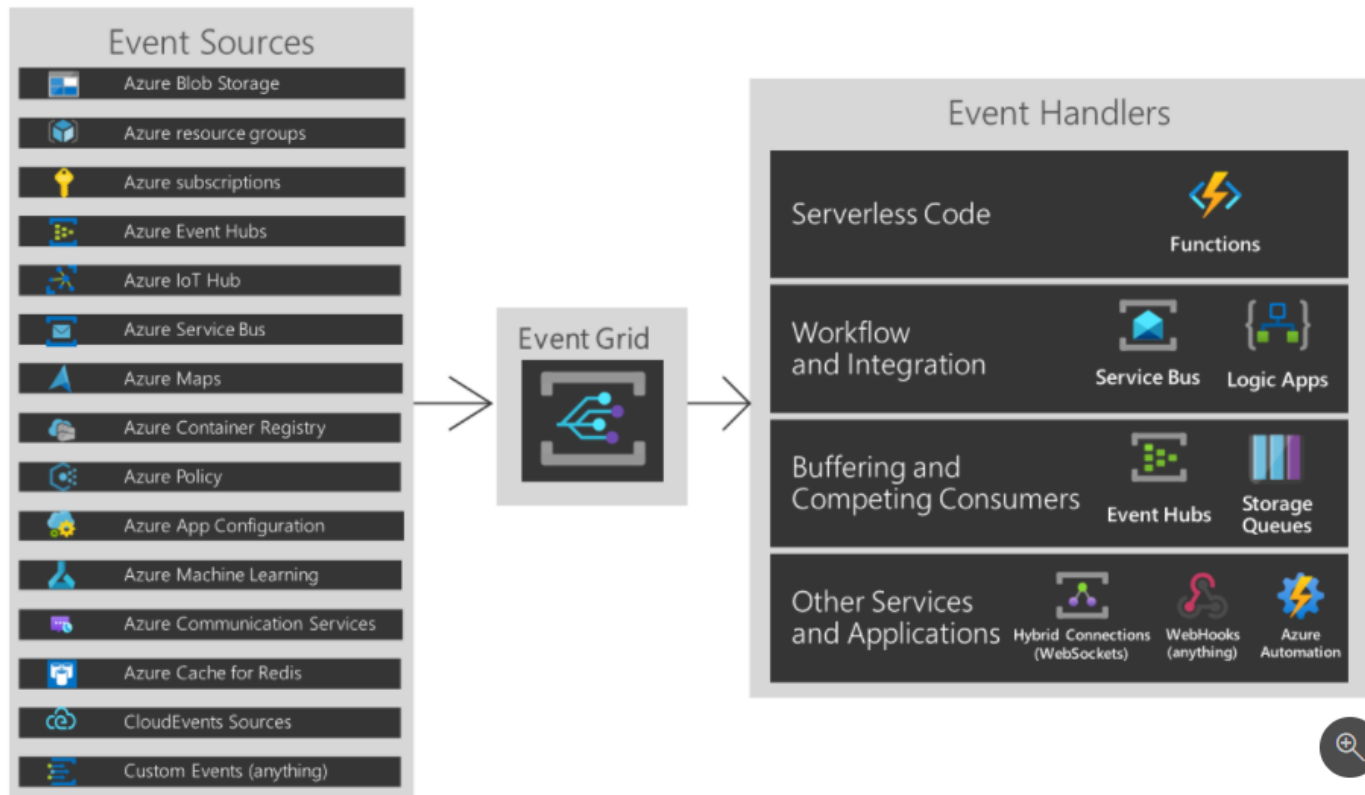
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# Azure Event Grid

- Azure Event Grid allows you to easily build applications with event-based architectures.
- Event sources (Azure App Configuration, Azure Blob Storage, Azure Communication Services, ...)
- Event handlers (Azure Functions, Event Hubs, etc.)



# Azure Event Grid



# Azure VMs and Containers

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# Azure VMs

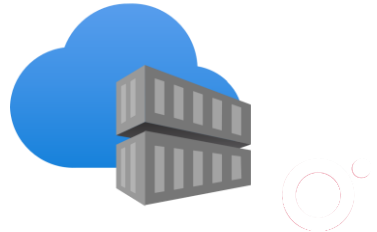
- An Azure VM gives you the flexibility of virtualization without having to buy and maintain the physical hardware that runs it.



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# Hosting Containers in Azure

- Azure Container Registry (ACR) : build, store, and manage container images and artifacts in a private registry
- Azure Container Instances (ACI): host isolated containers
- Azure Kubernetes Service (AKS): simplifies deploying a managed Kubernetes cluster in Azure



# Logging and Monitoring



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# Alerts and Metrics

- Metric alerts in Azure Monitor provide a way to get notified when one of your metrics crosses a threshold.



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# Application Insights

- A feature of Azure Monitor, is an extensible Application Performance Management (APM) service for developers and DevOps professionals.



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# Azure Log Analytics

- Log Analytics is a tool in the Azure portal used to edit and run log queries with data in Azure Monitor Logs.



# The Exam

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# Questions in AZ-204

- Multiple choice
- Drag and drop
- Scenario based
- There will be hands-on labs



# AZ-204

- Exam AZ-204: <https://docs.microsoft.com/en-us/learn/certifications/exams/az-204>
- Skills measured :  
<https://query.prod.cms.rt.microsoft.com/cms/api/am/binary/RE4oZ7B>



debugging, performance tuning, and monitoring.

You may be eligible for ACE college credit if you pass this certification exam. See [ACE college credit for certification exams](#) for details.

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

Related exams: none

Important: [See details](#)

[Go to Certification Dashboard](#)

## Schedule exam

### Exam AZ-204: Developing Solutions for Microsoft Azure

United States

**Languages:** English, Japanese, Chinese (Simplified), Korean

**Retirement date:** none

This exam measures your ability to accomplish the following technical tasks: develop Azure compute solutions; develop for Azure storage; implement Azure security; monitor, troubleshoot, and optimize Azure solutions; and connect to and consume Azure services and third-party services.

**\$165 USD\***

Price based on the country in which the exam is proctored.

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To verify you are a Microsoft employee, link your Microsoft work account (alias@microsoft.com).

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If you recently attended a Microsoft event, you may be eligible for a discounted Microsoft Certification exam. To check eligibility, select an event you attended and verify the account used to register for the event. [Terms and Conditions](#) apply.

Microsoft Ignite 2019, Orlando

Verify account

Continue scheduling exam

Proceed to the Pearson VUE website to complete the exam scheduling process.

Go to Pearson VUE





## Select exam options

DP-200: Implementing an Azure Data Solution

All fields are required.

How do you want to take your exam? [Exam delivery option descriptions](#)

- ☐ At a local test center
- ☒ At my home or office
- ☐ I have a Private Access Code

Are you going to be testing on this device and network?

If so, perform a quick pre-check to verify compatibility of your device and network before planning to take this exam in your home or office.  
If you skip, be sure to do a full system test before test day to avoid lost exam fees and launch delays.

[Run pre-check](#)

[Next](#)



## System check - Checking your requirements



Microphone

Default - Microphone (SI)



Internet speed



Webcam

Integrated Webcam (0c

Next



# Course Repository

<https://github.com/zaalion/oreilly-application-dev-azure>

<https://github.com/zaalion/oreilly-az-204>



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# Q&A



**O'REILLY<sup>®</sup>**

**Thank you!**

**Reza Salehi**

**@zaalion**

