



# Azure Cosmos DB

## An Overview



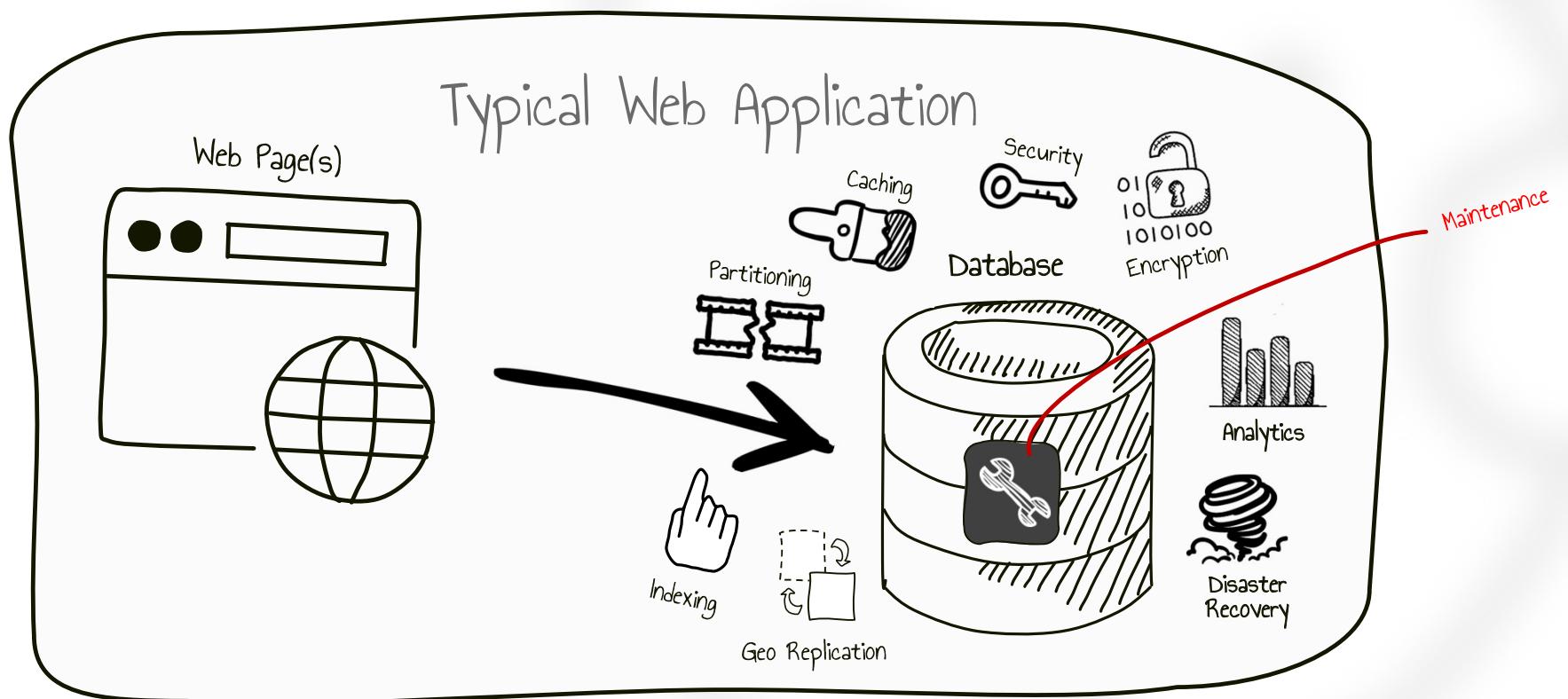
**Adnan Hashmi**

**in** [aka.ms/Adnan](https://www.linkedin.com/in/aka.ms/Adnan)

**twitter** [pkstn.co/Adnan](https://pkstn.co/Adnan)

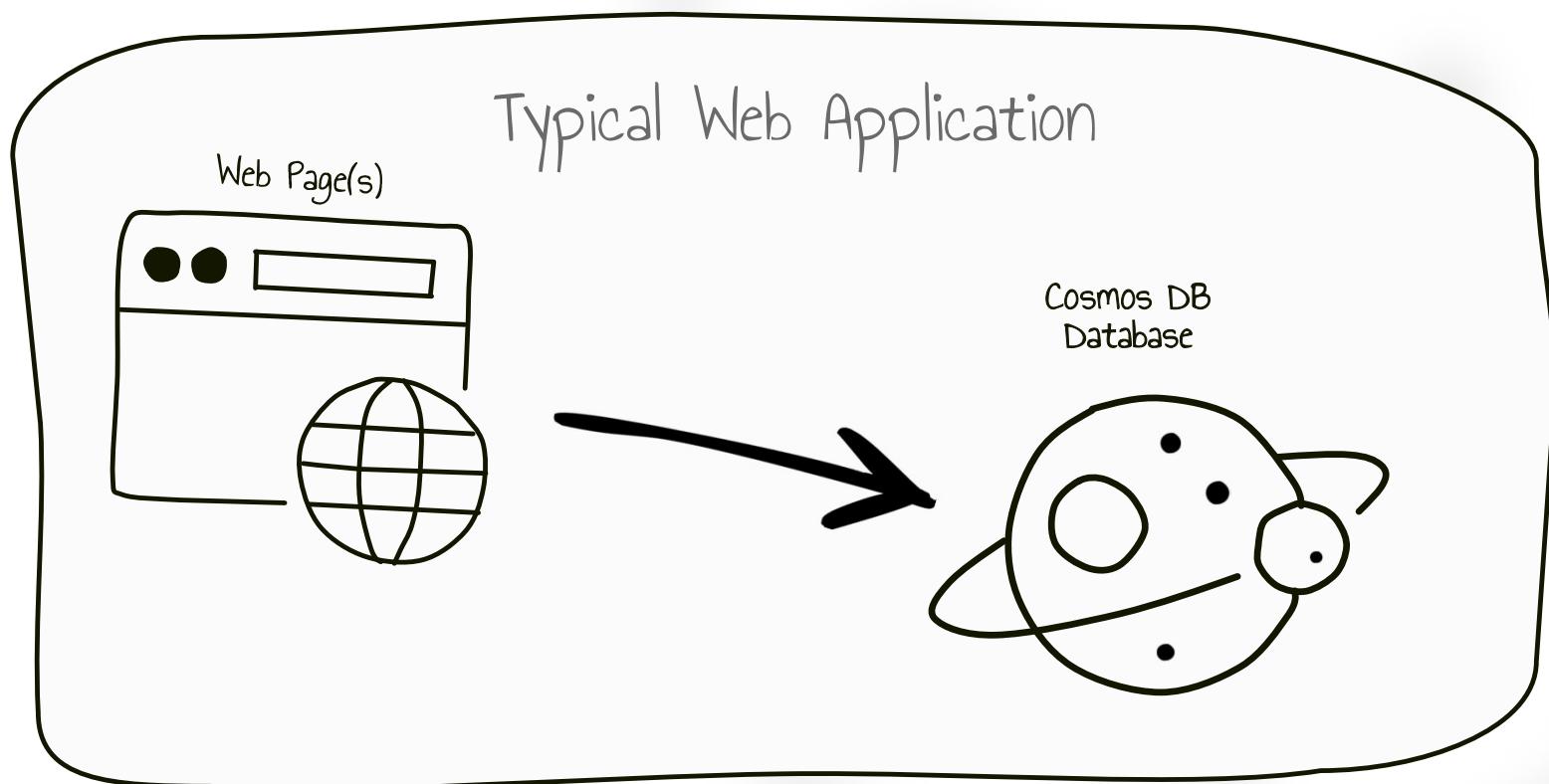
tags: azure, cosmos db, data, organization

## WHY Azure Cosmos DB?



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## WHY Azure Cosmos DB?



# Platform

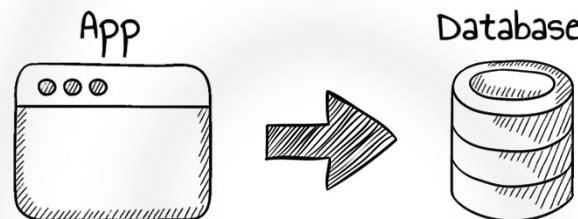
A closer look at Azure Cosmos DB



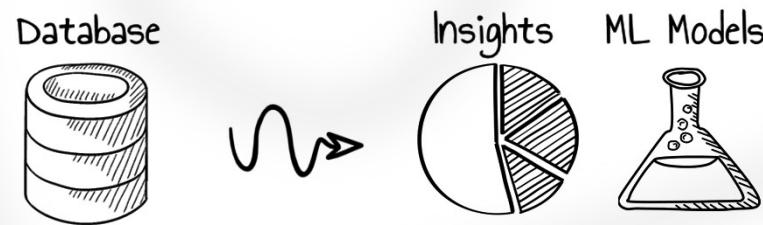
tags: workloads, web application, database, machine learning, report, visualization

# Application Workloads

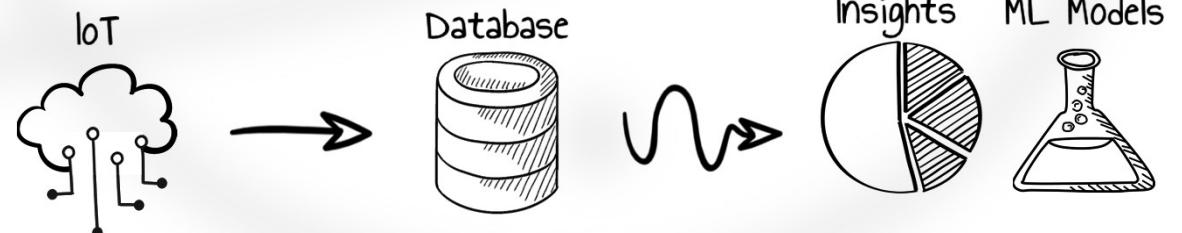
- Operational



- Analytical



- Streaming



tags: workloads, web application, database, machine learning, report, visualization

# Application Workloads

- Operational



SQL Server  
Azure Storage Tables  
HBase  
Cosmos DB ✓

- Analytical



Azure Data Lake  
Hive + Apache Spark  
Cosmos DB ✓

- Streaming

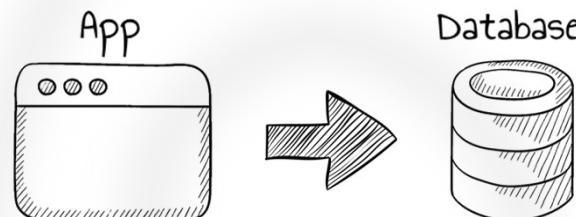


Stream Analytics  
HDInsight Kafka  
Event Hubs  
IoT Hub  
Cosmos DB ✓

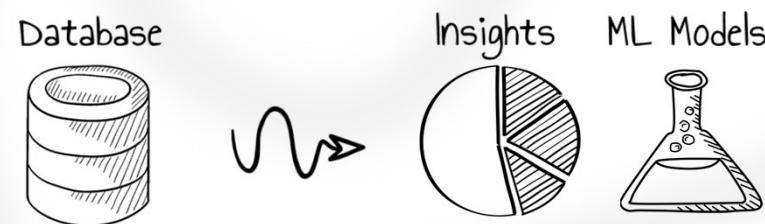
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# Application Workloads

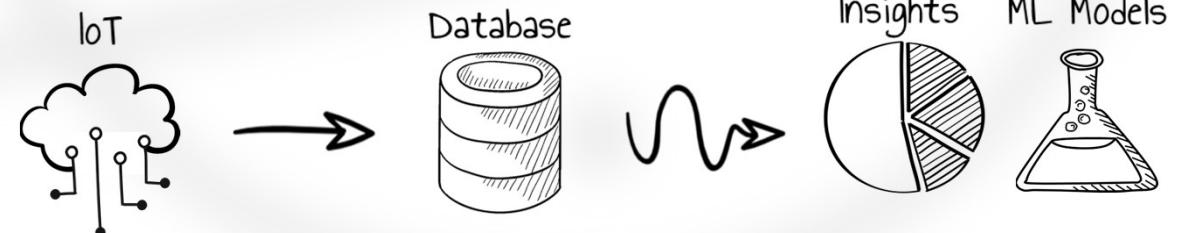
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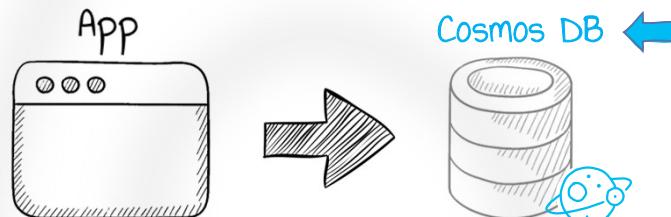
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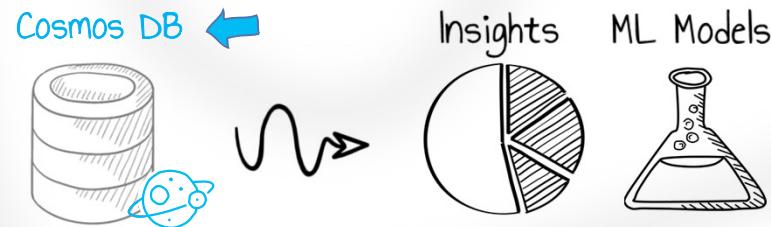
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## Cosmos DB Workloads

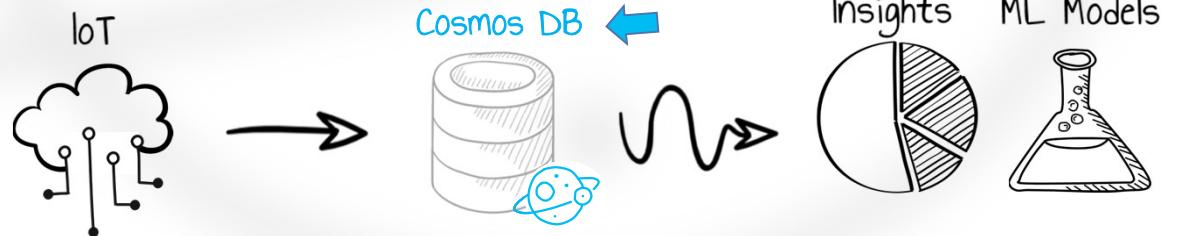
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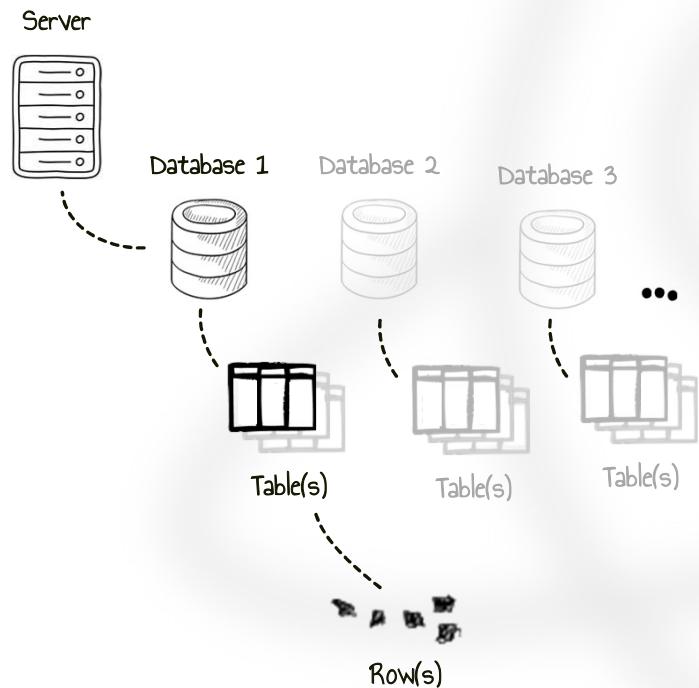


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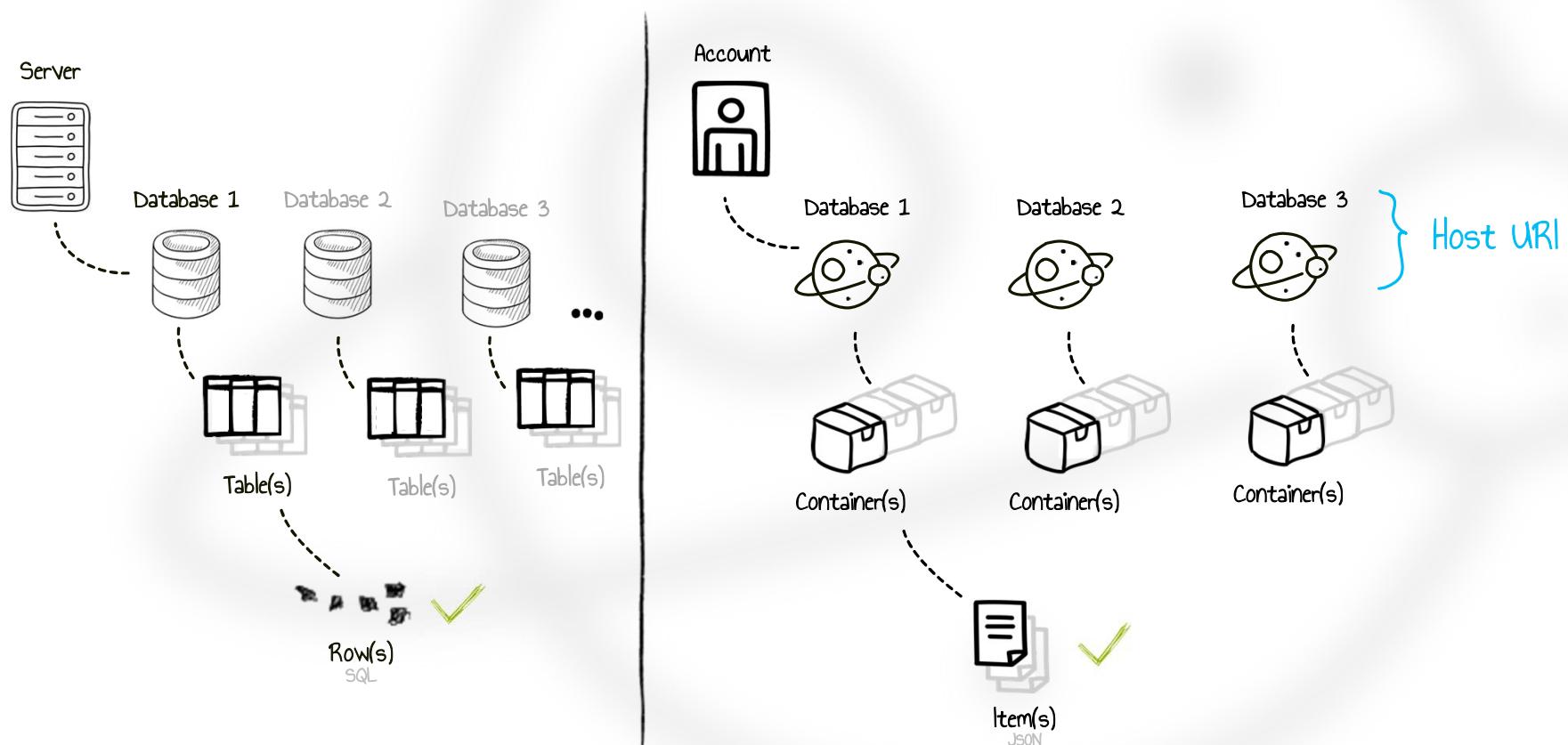
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# Typcial Database Architecture

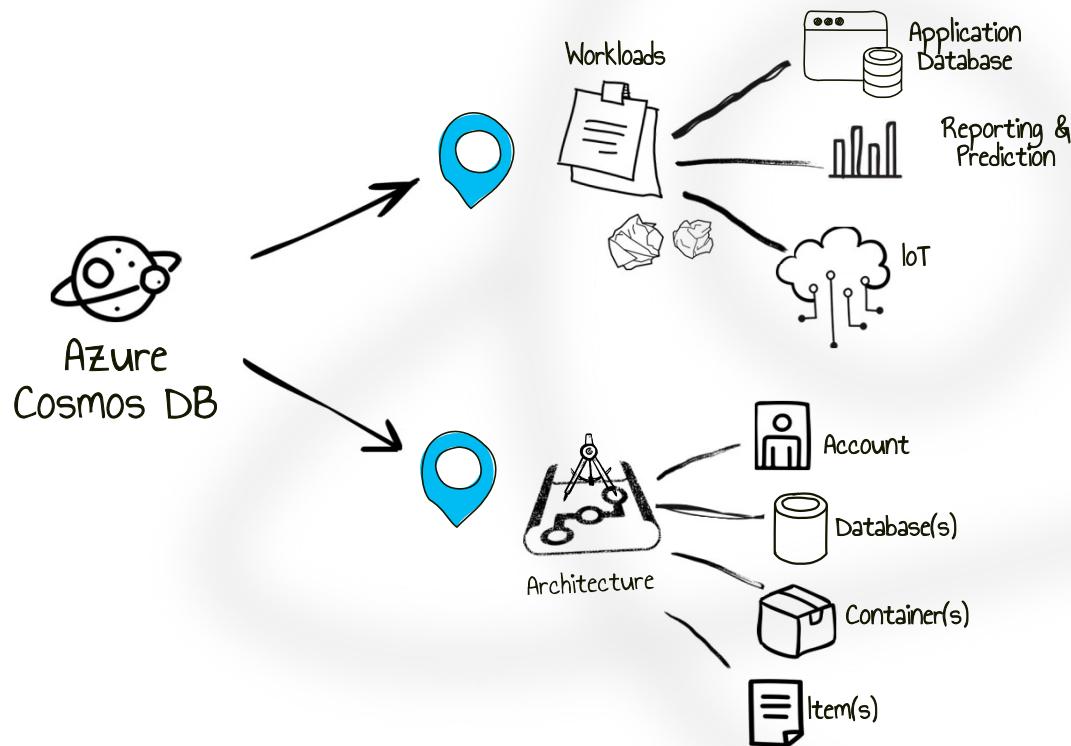


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# Cosmos DB Architecture



## Section Recap



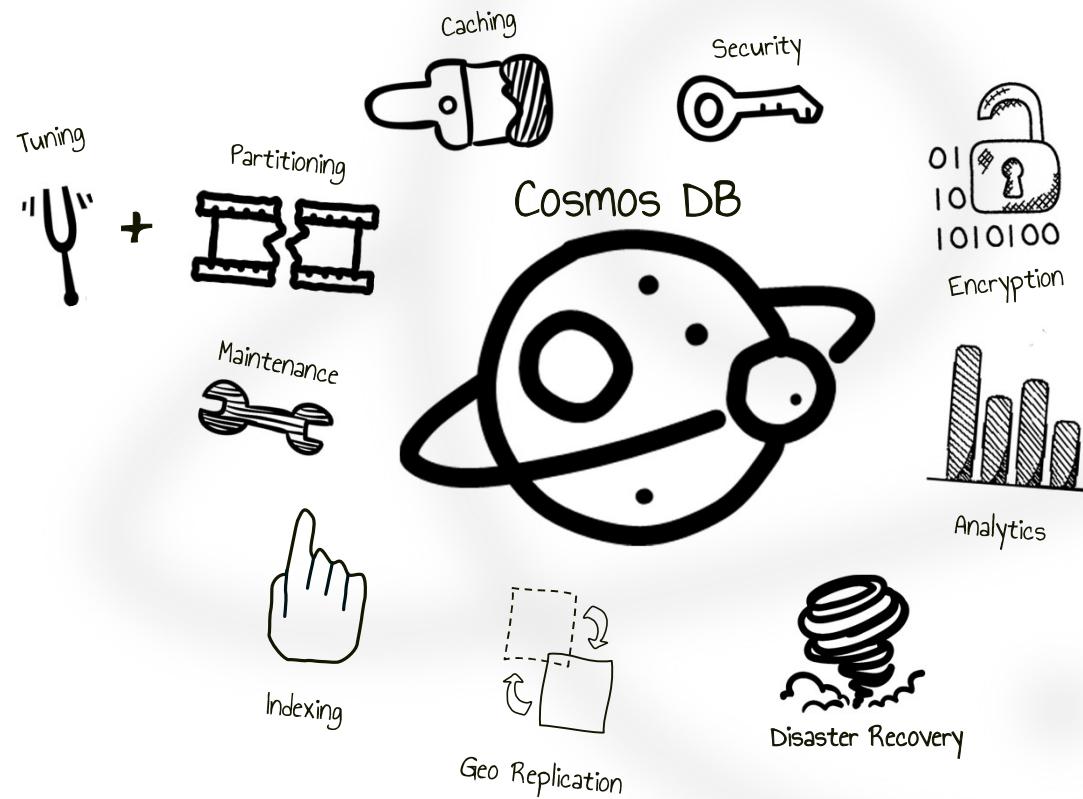
# Capabilities

Individual database capabilities required by application developers



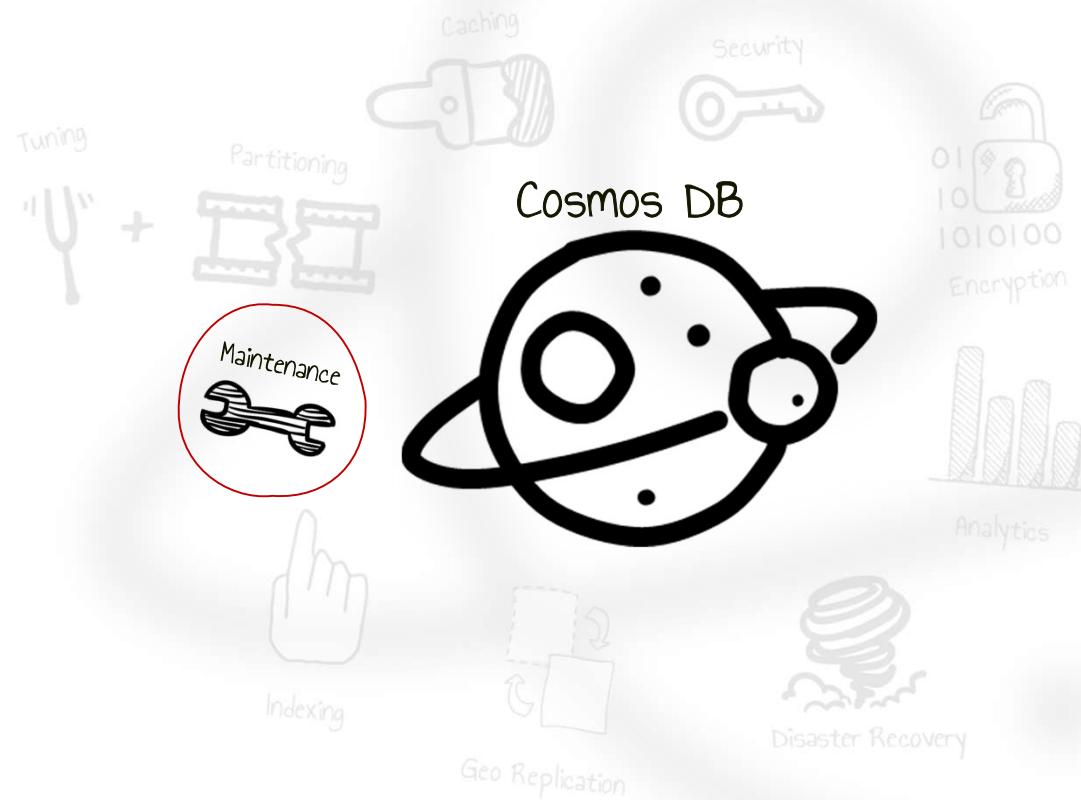
tags: azure, cosmos db, capability

# Notable Capabilities



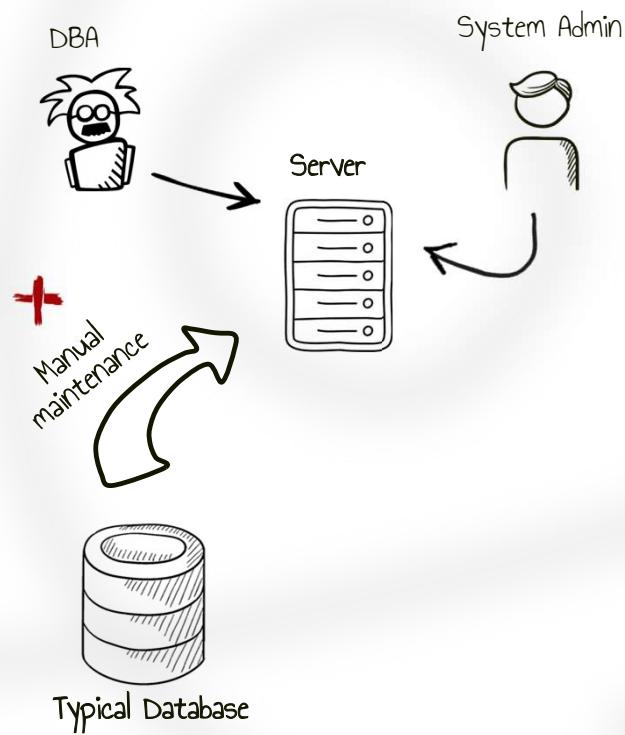
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# Azure Cosmos DB



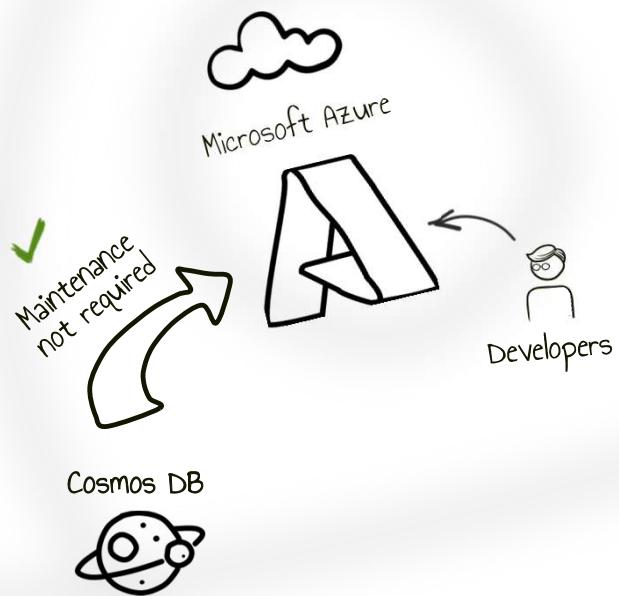
**tags:** azure, cosmos db, install, maintain

# Maintenance



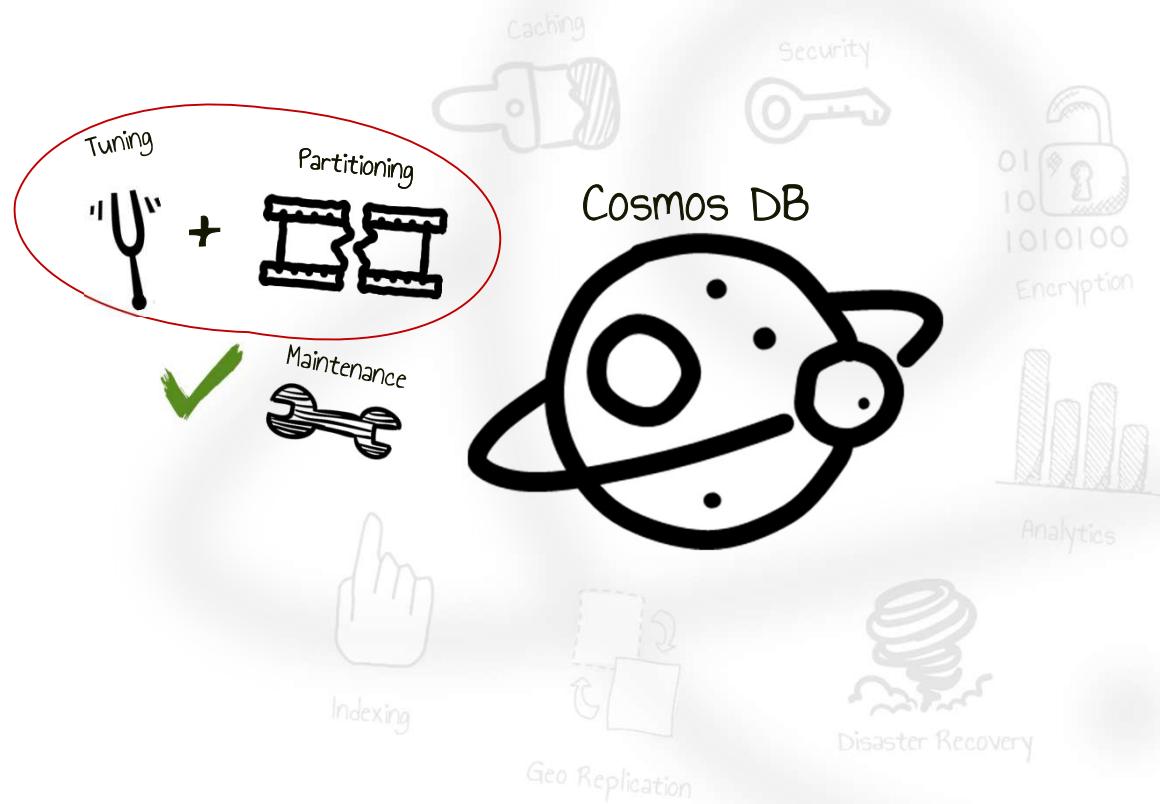
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# Maintenance



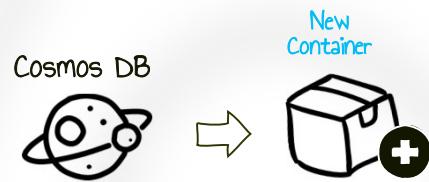
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# Azure Cosmos DB



**tags:** azure, cosmos db, partition, provision

# Tuning + Partitioning



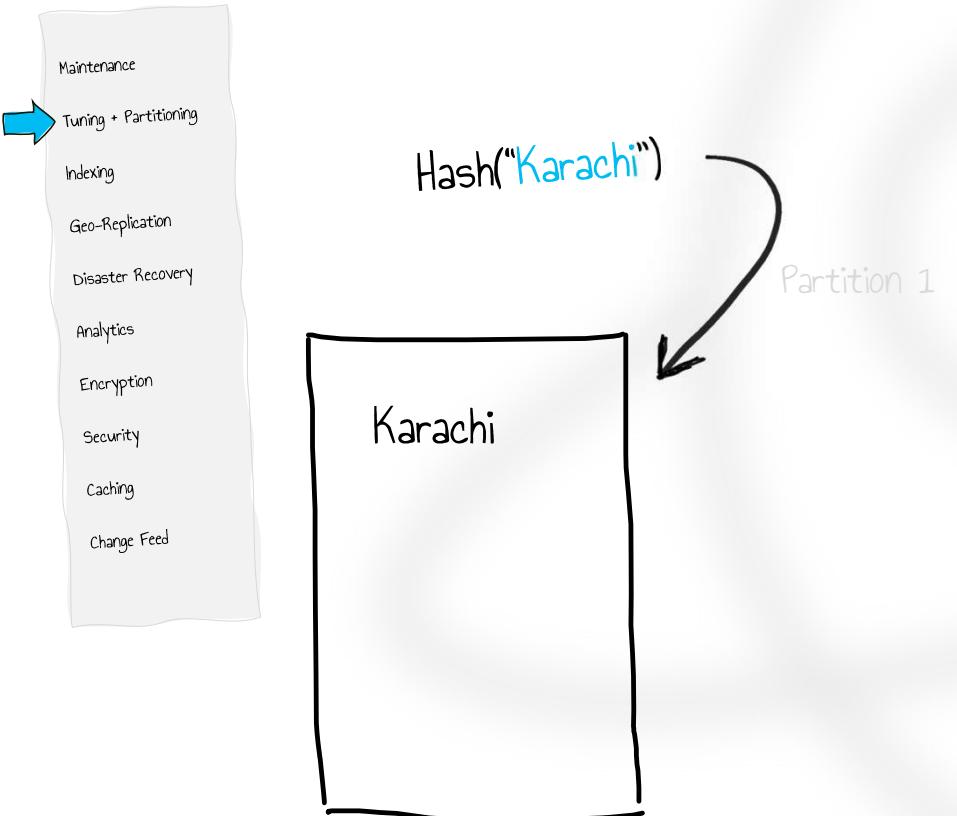
Partition Key → City

Hash(City)

Used to determine partition

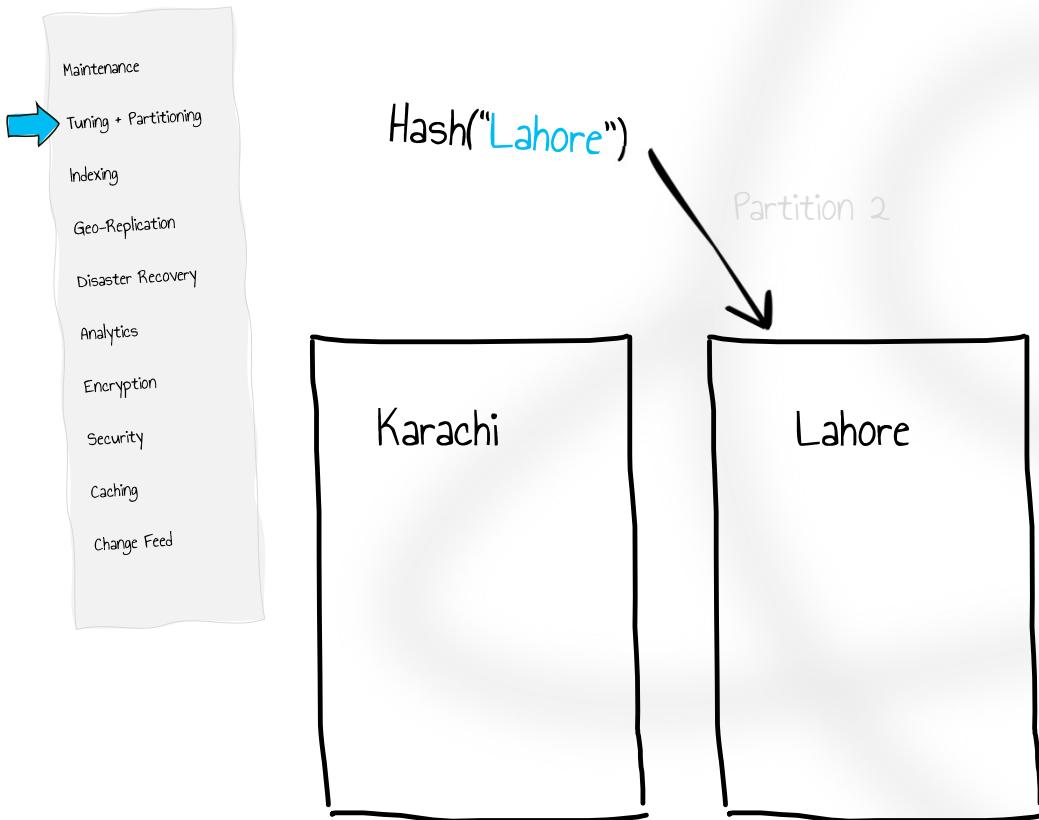
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# Tuning + Partitioning



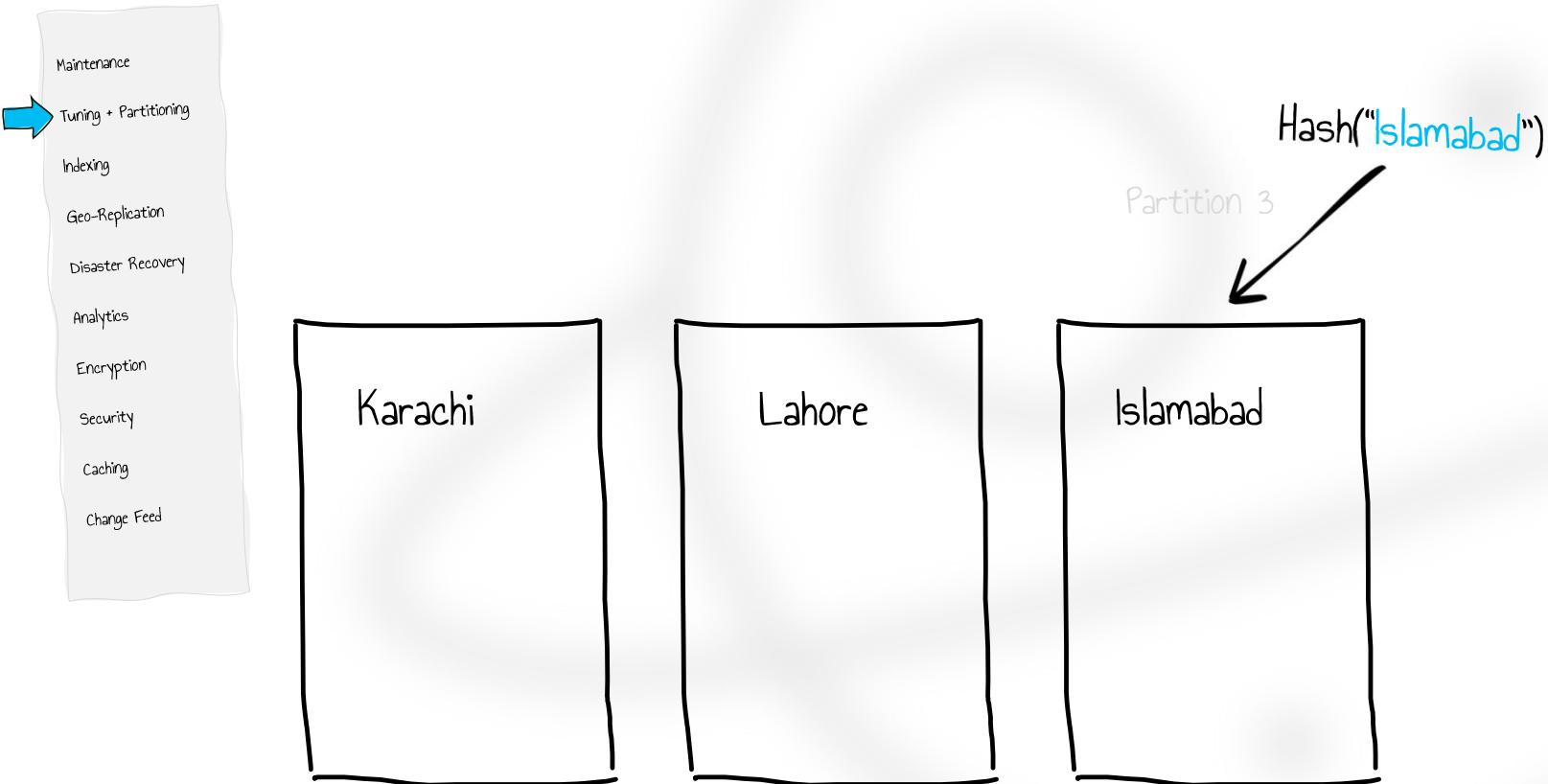
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# Tuning + Partitioning



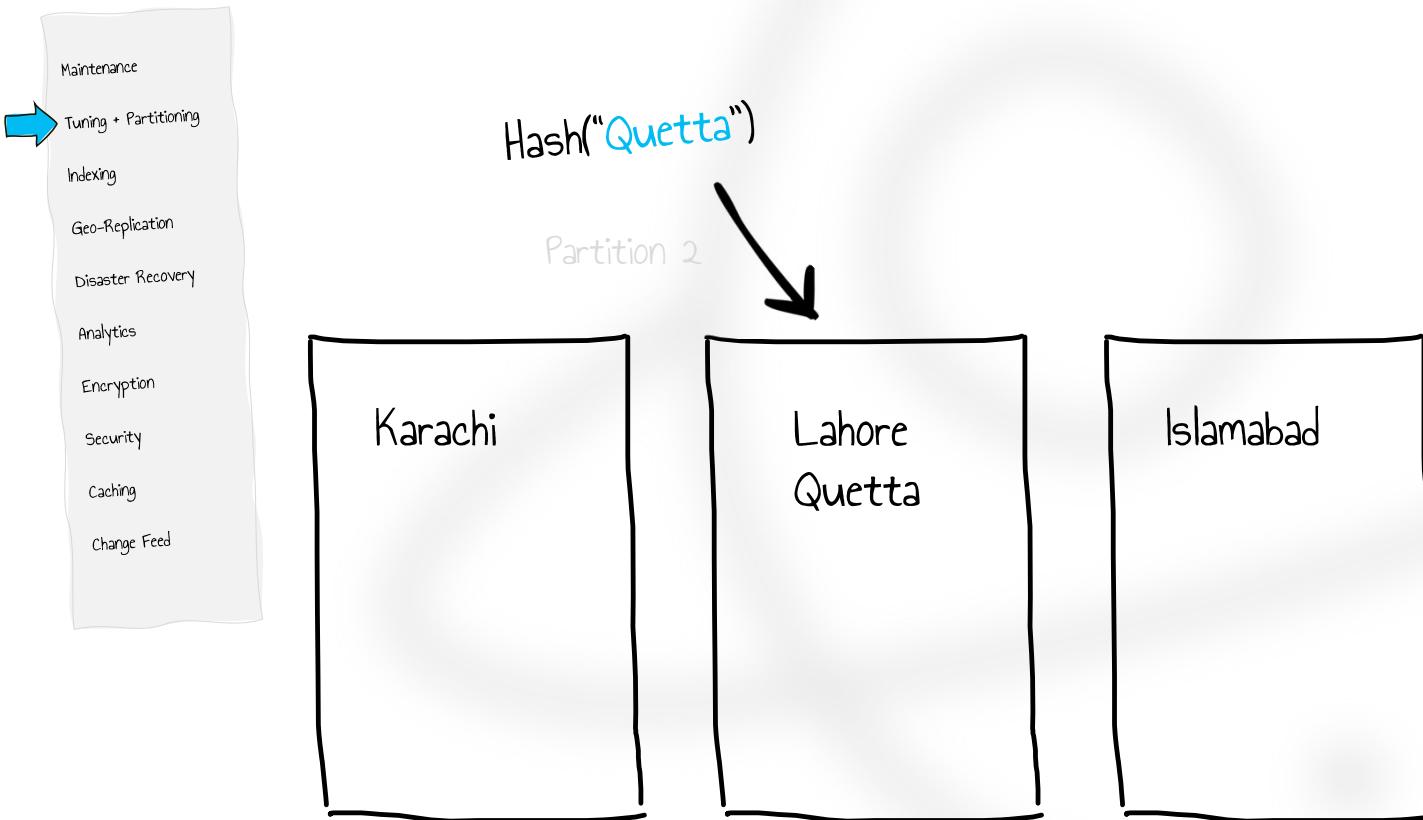
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# Tuning + Partitioning



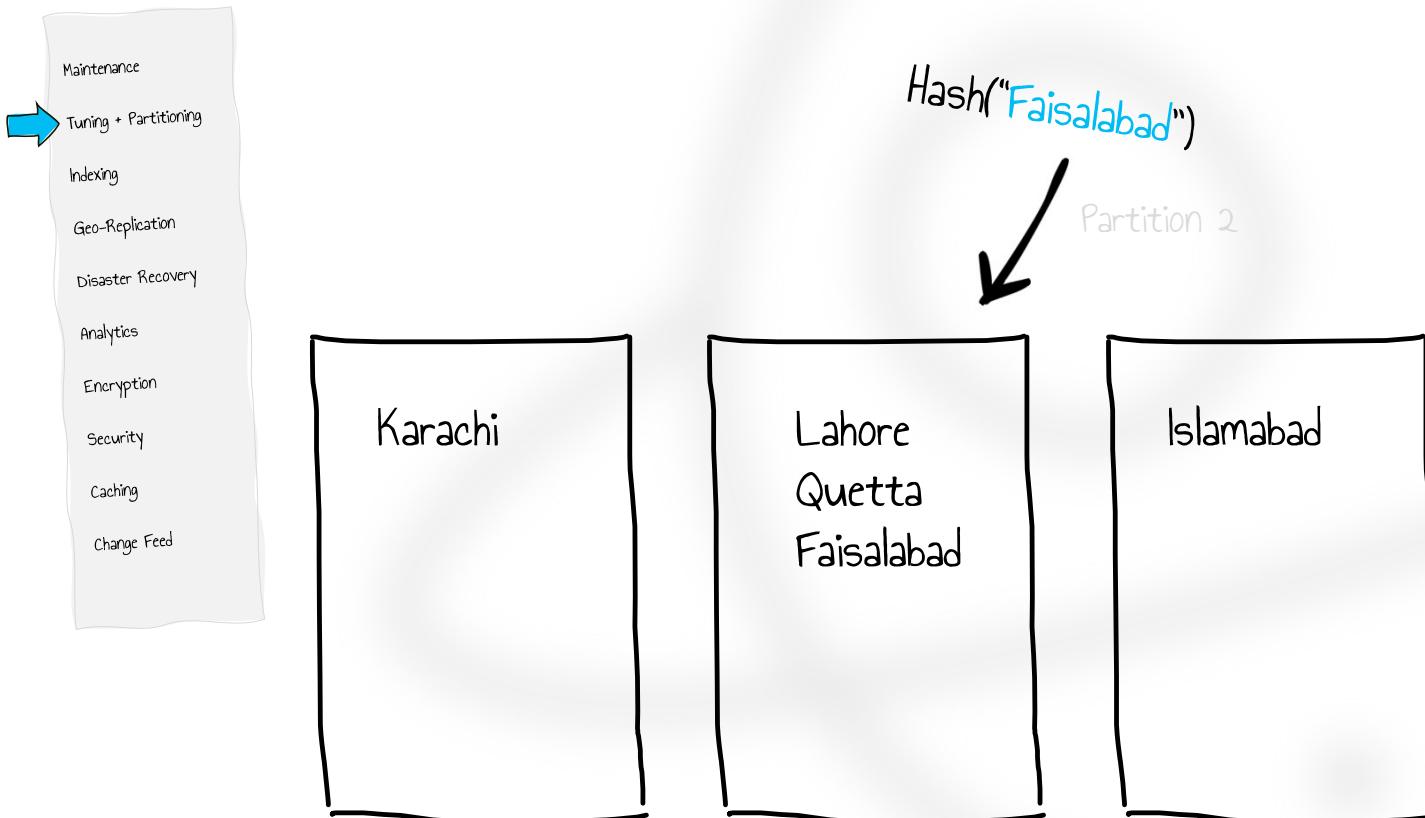
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# Tuning + Partitioning



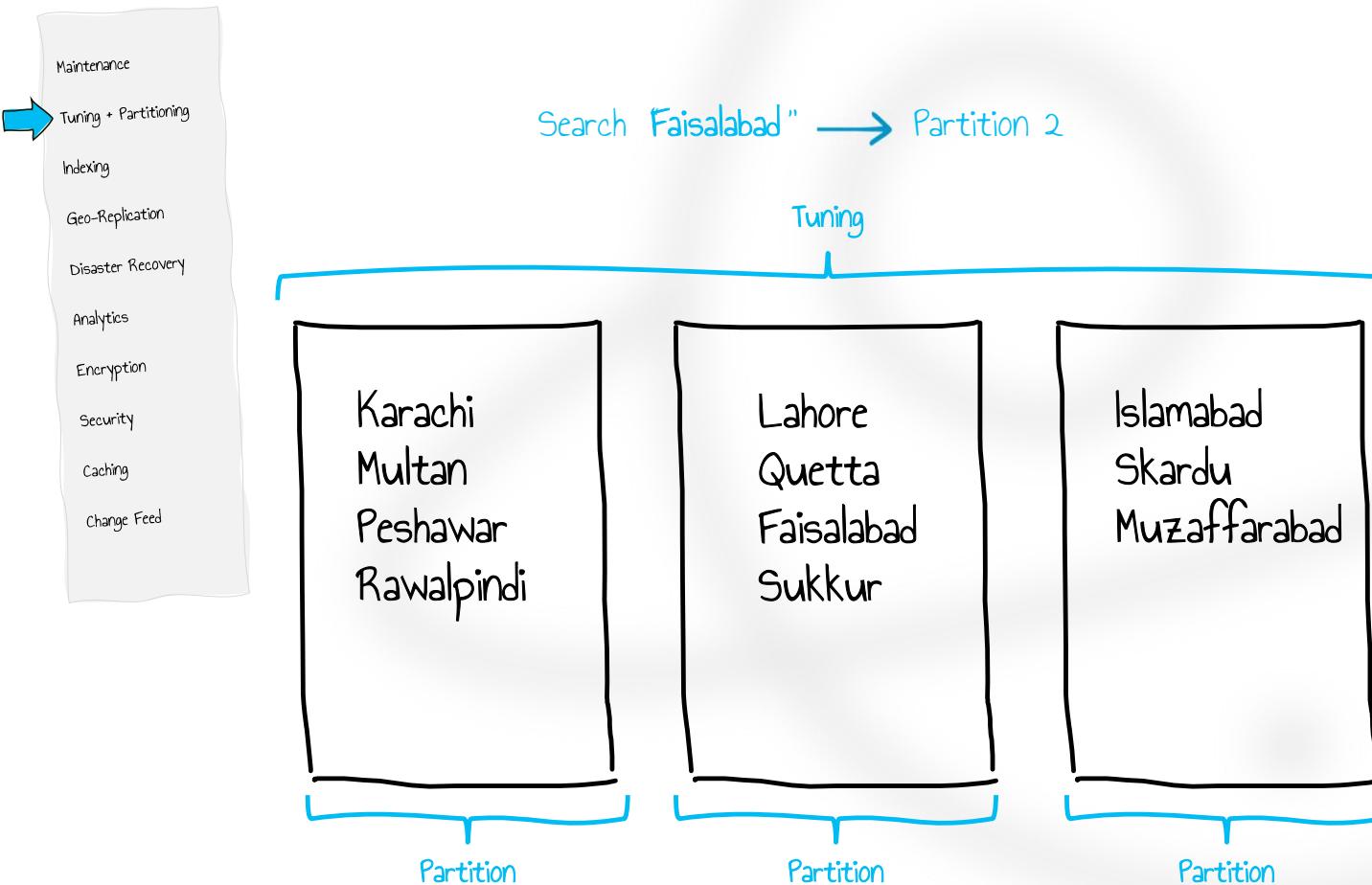
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# Tuning + Partitioning



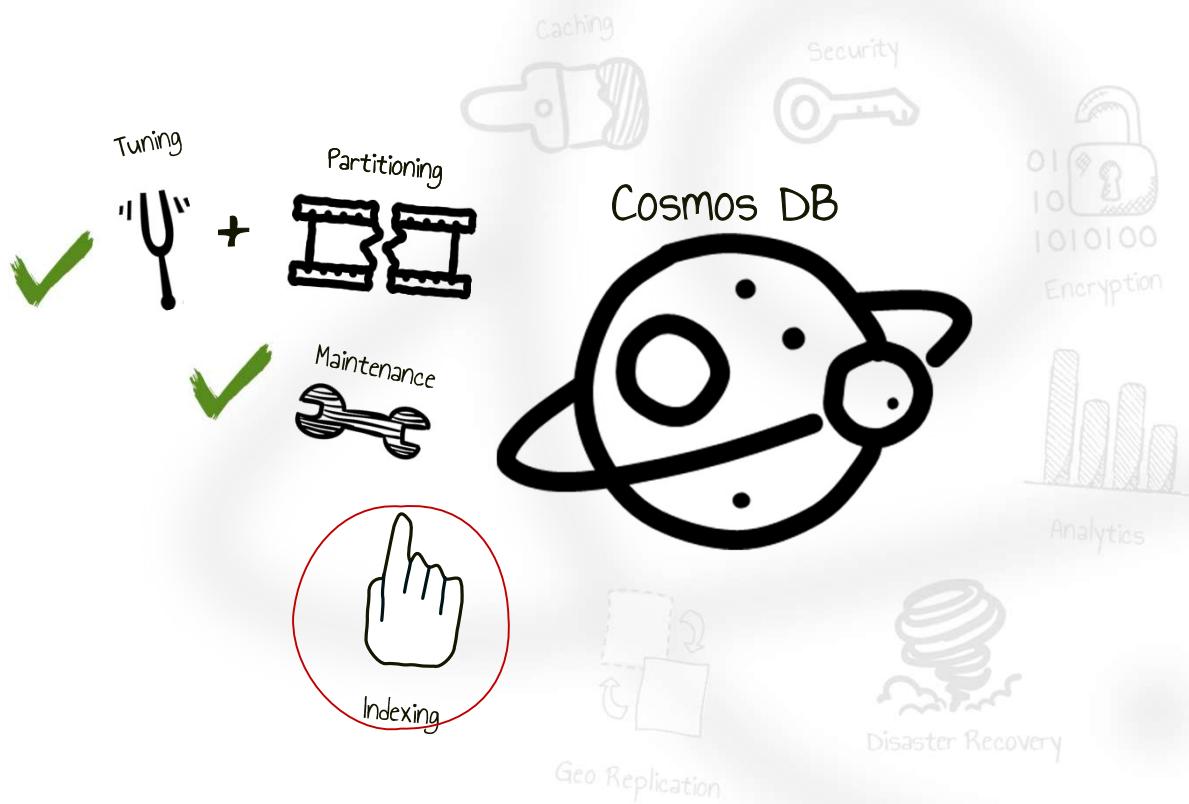
**tags:** azure, cosmos db, partition, provision, search, keyword

# Tuning + Partitioning



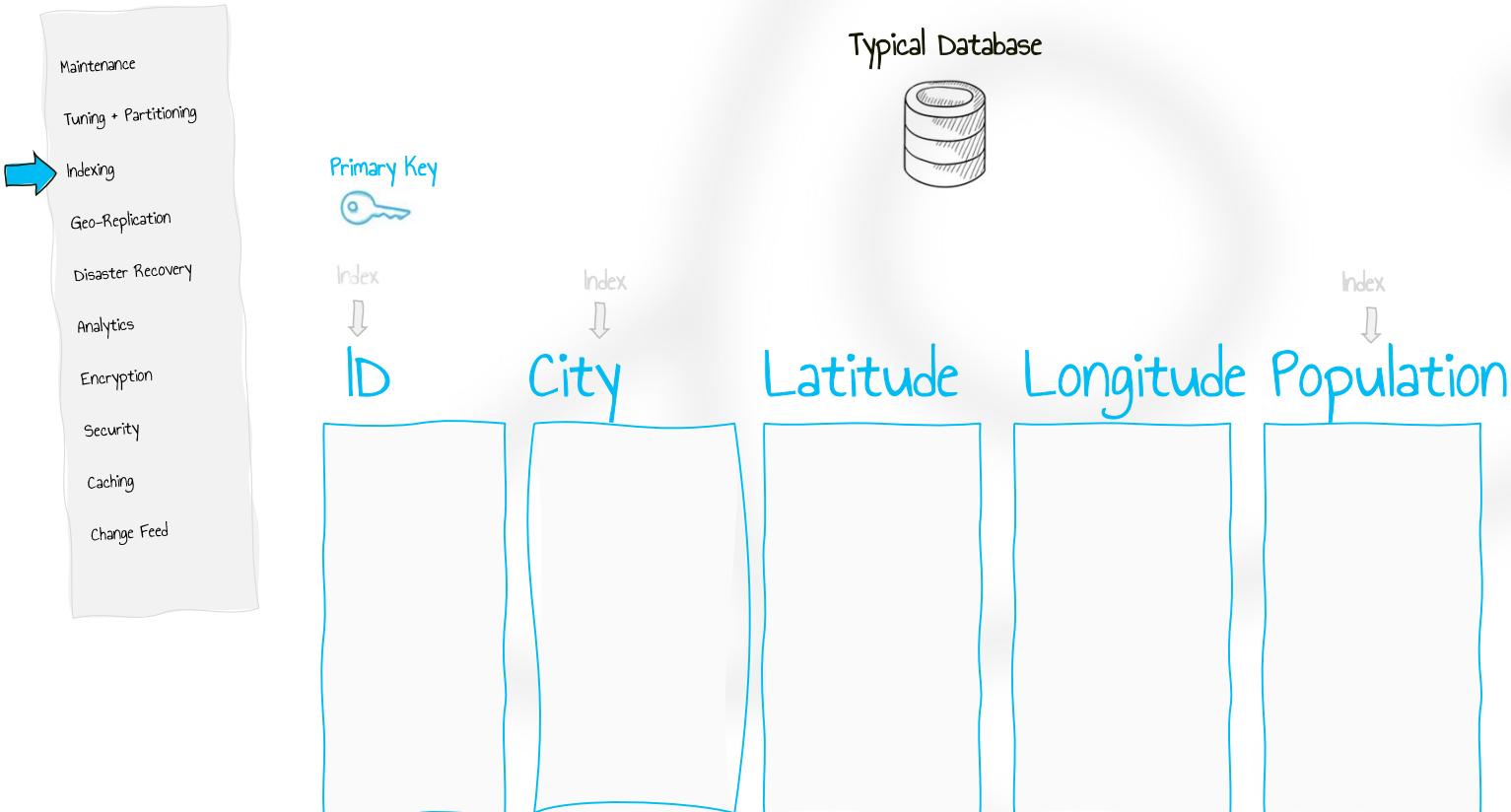
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# Azure Cosmos DB



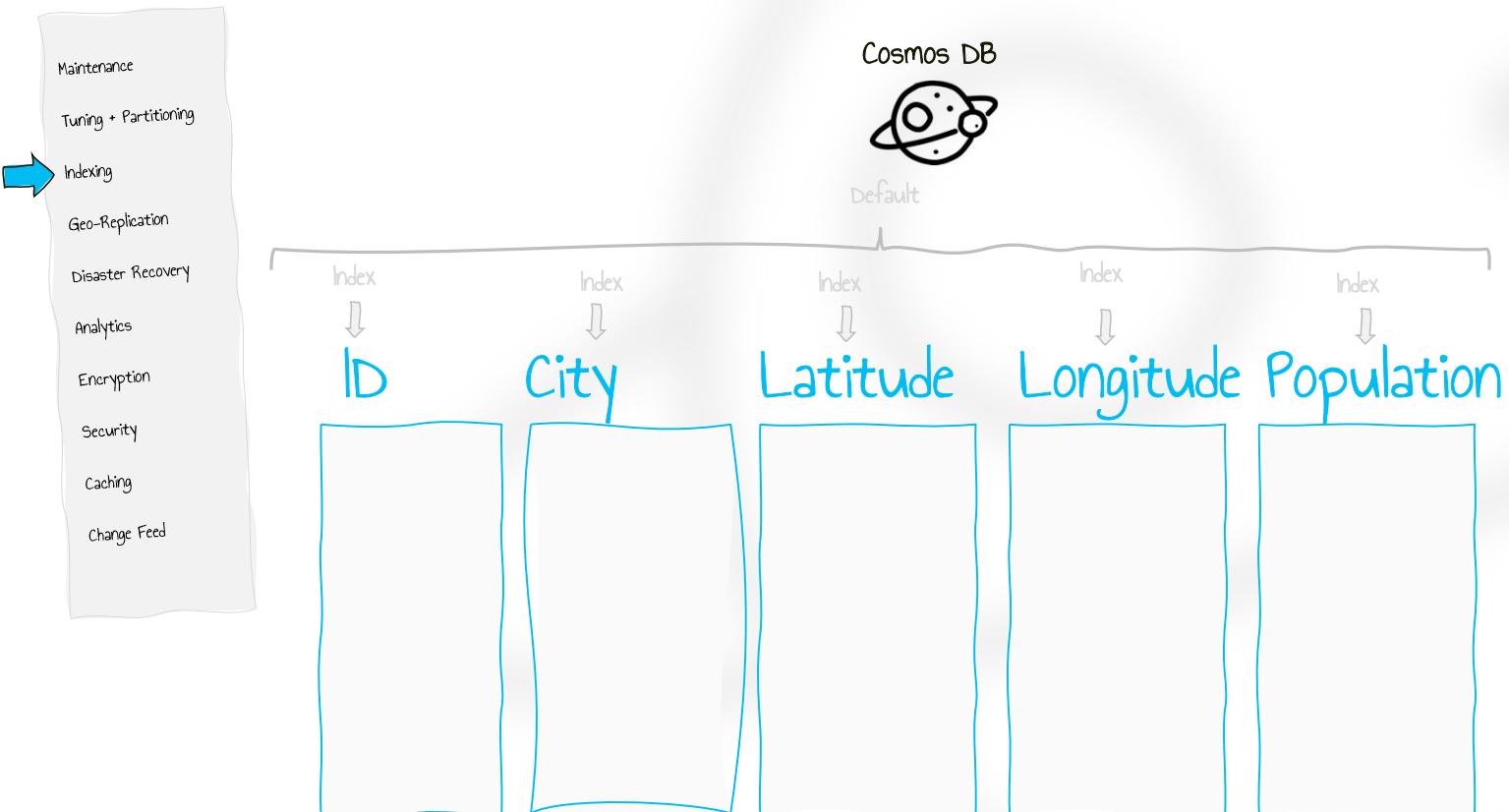
**tags:** azure, cosmos db, index, performance

# Indexing



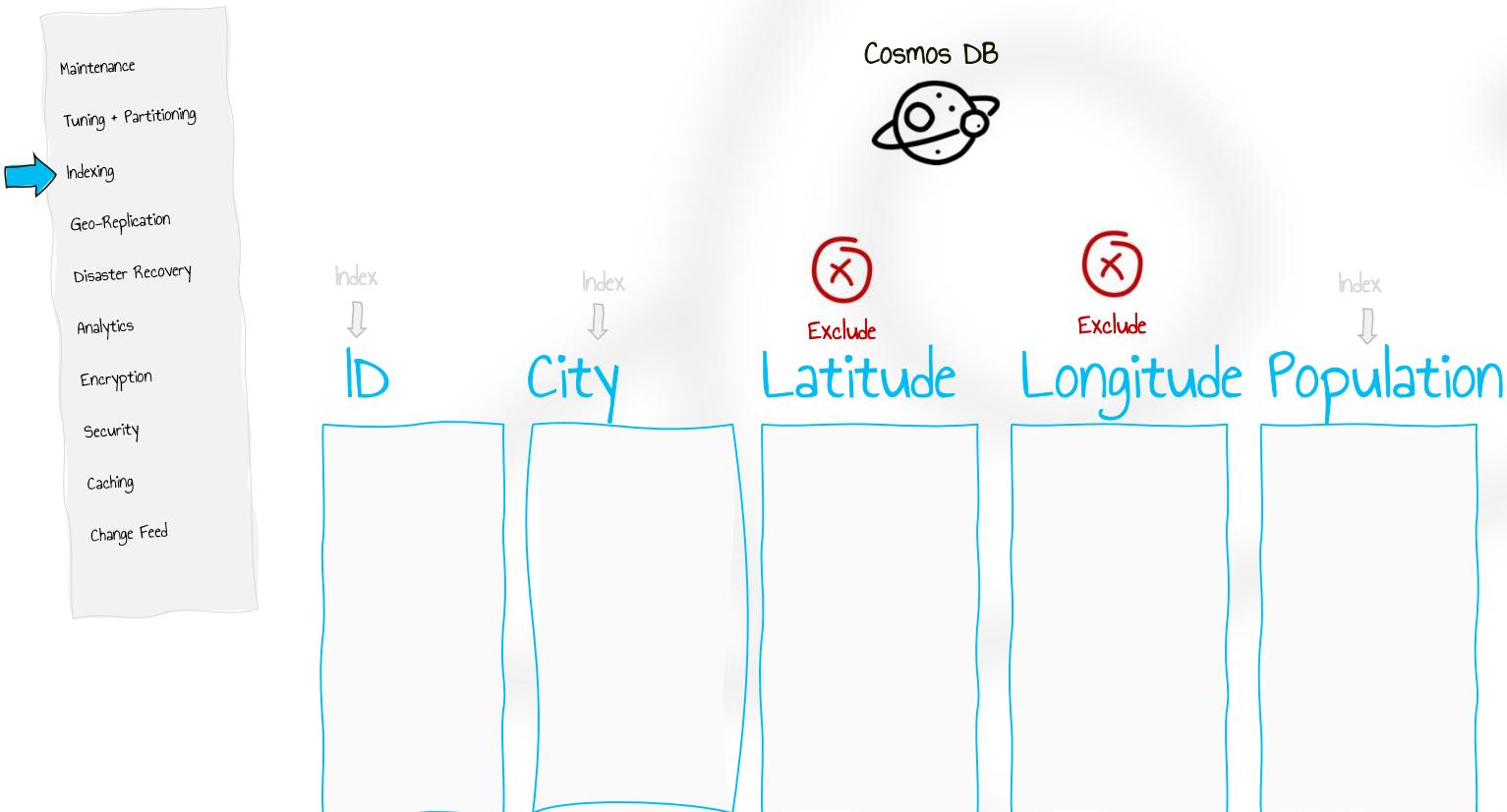
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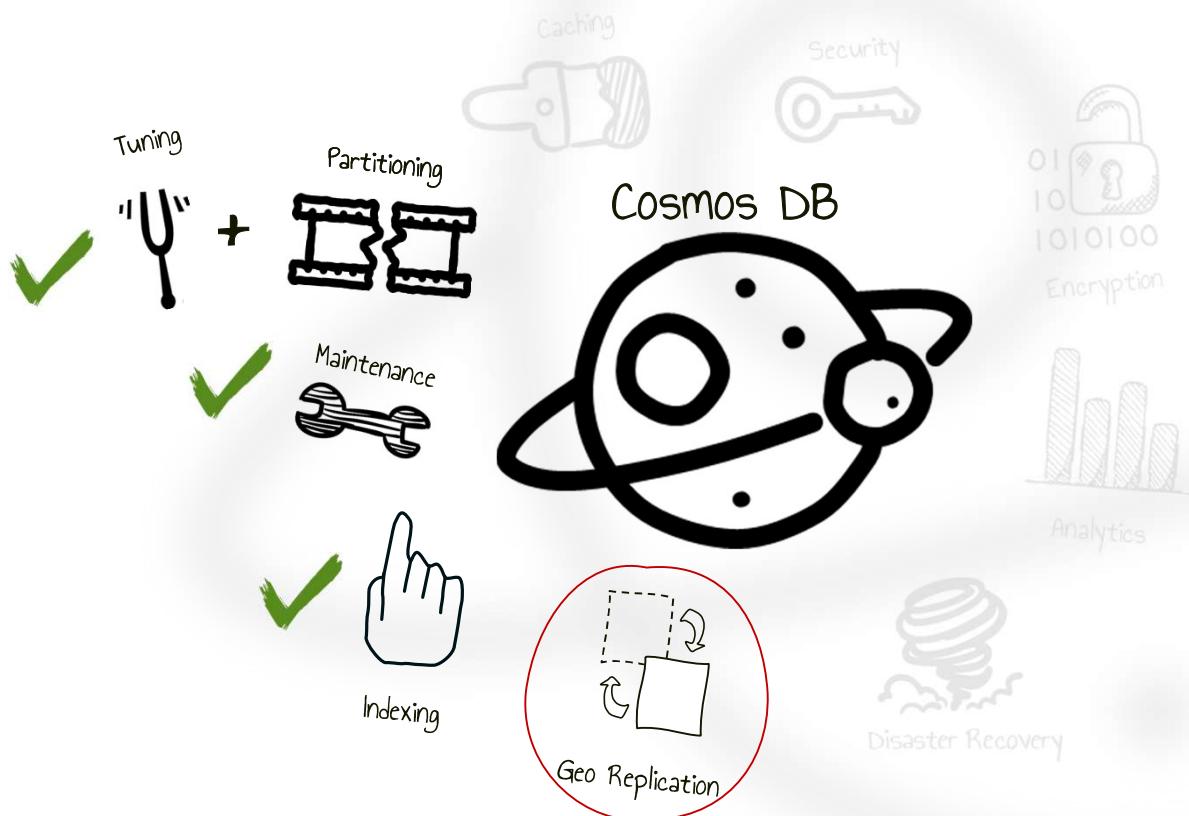
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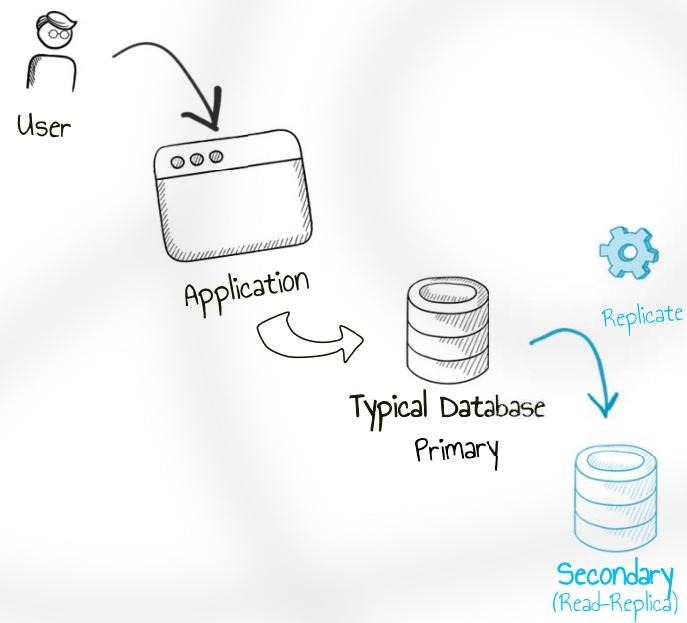
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# Azure Cosmos DB



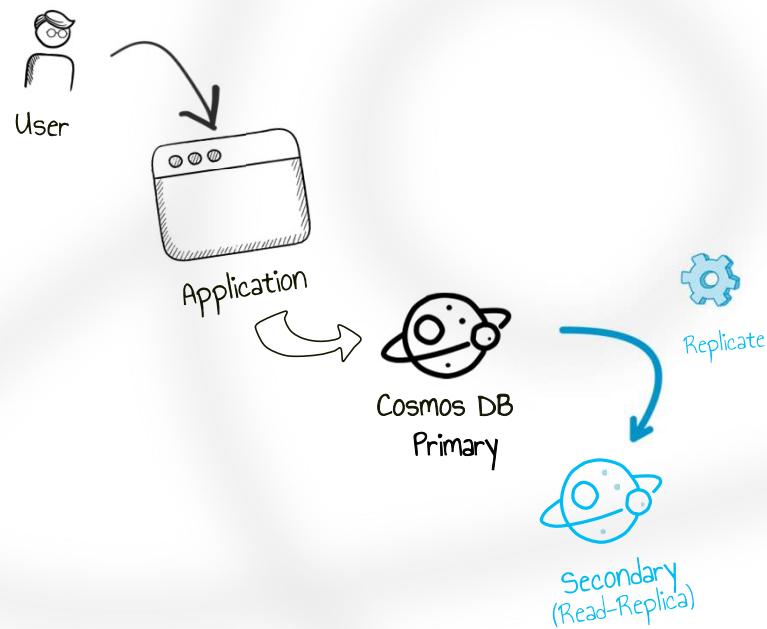
tags: azure, cosmos db, copy, geography, replicate

# Geo-Replication



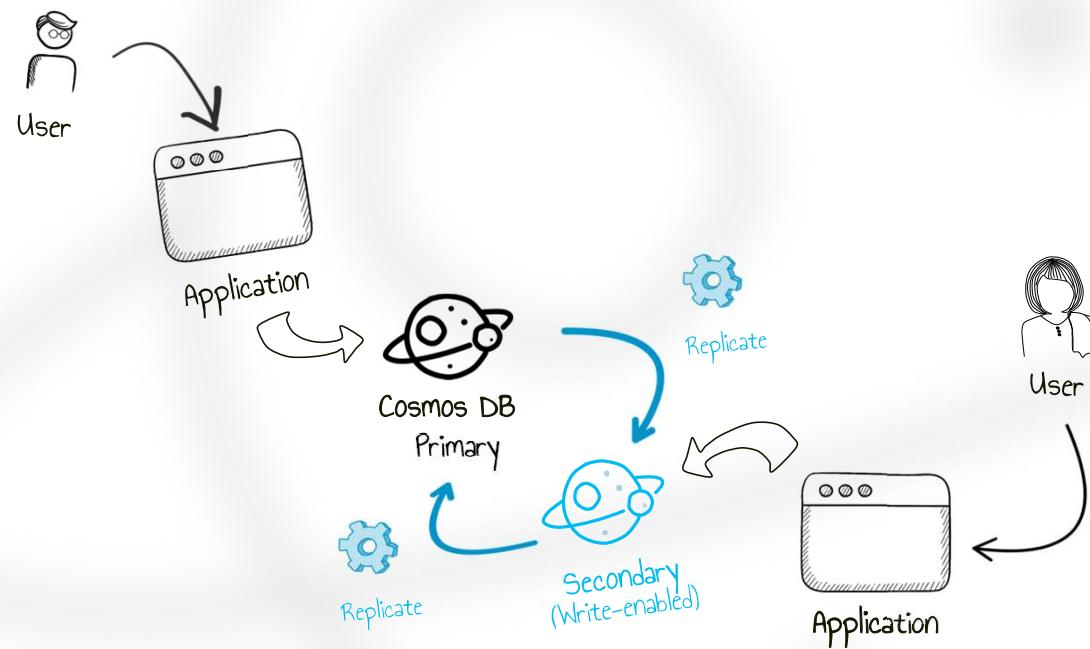
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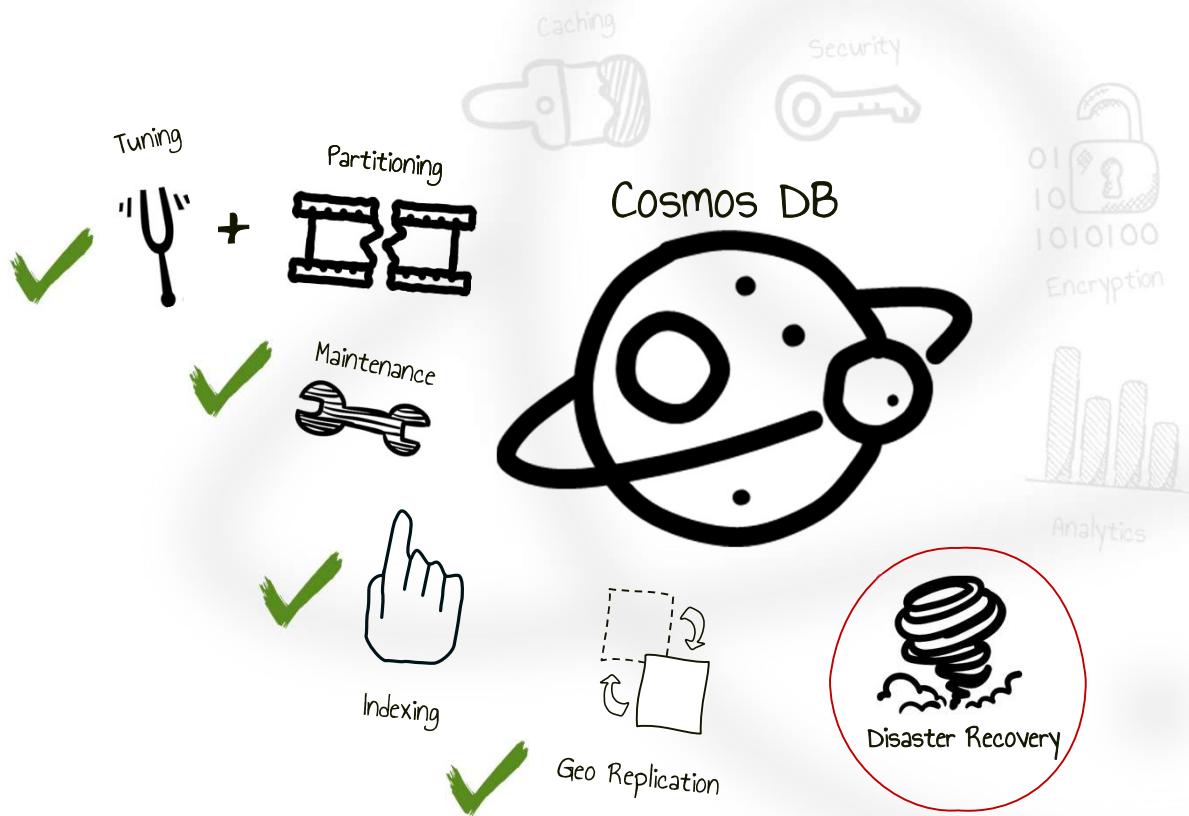
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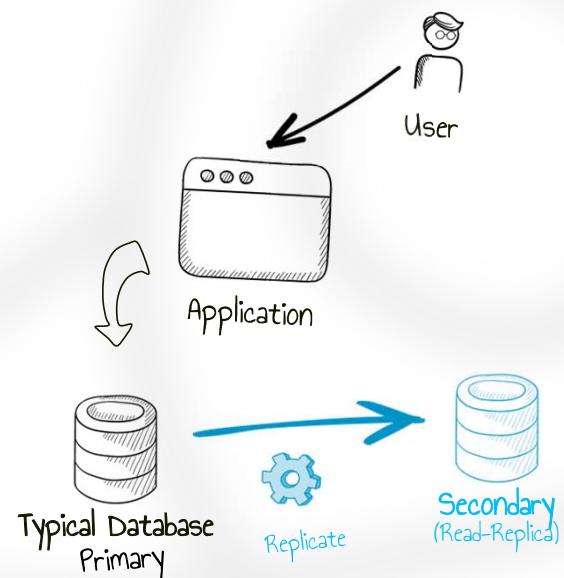
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# Azure Cosmos DB



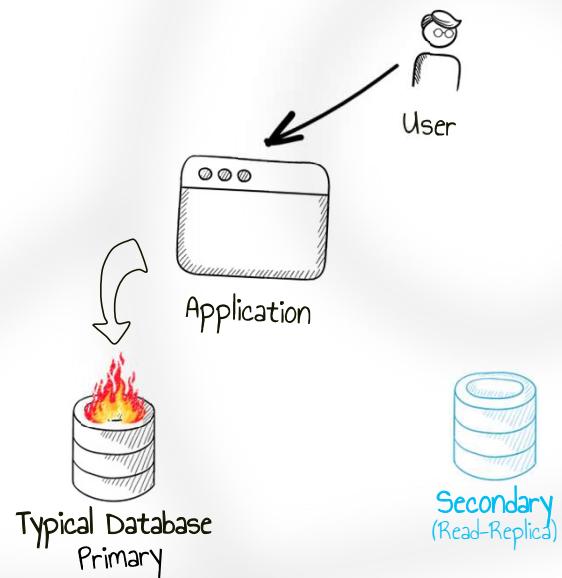
tags: azure, cosmos db, failover, recover, bcdr

# Disaster Recovery



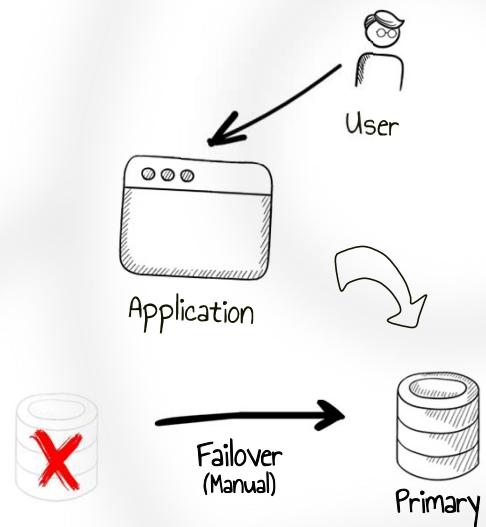
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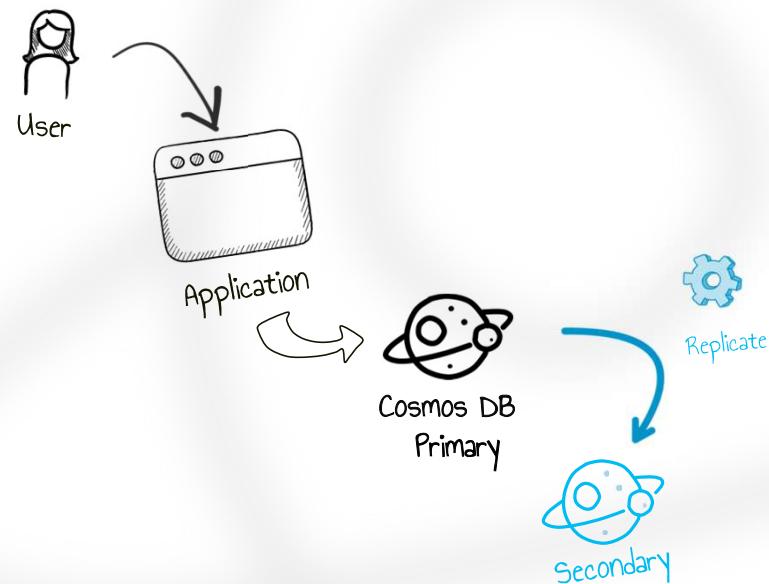
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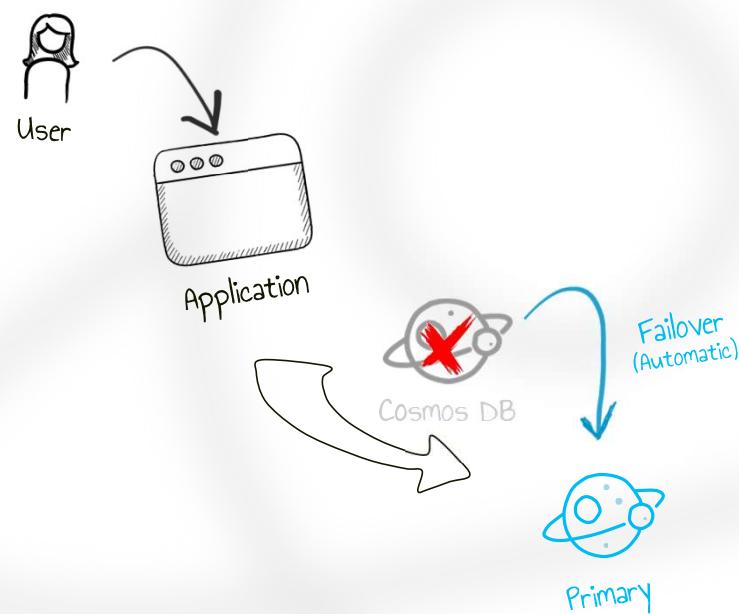
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# Disaster Recovery



tags: azure, cosmos db, failover, recover, bcdr

# Disaster Recovery



tags: azure, cosmos db, failover, recover, consistency

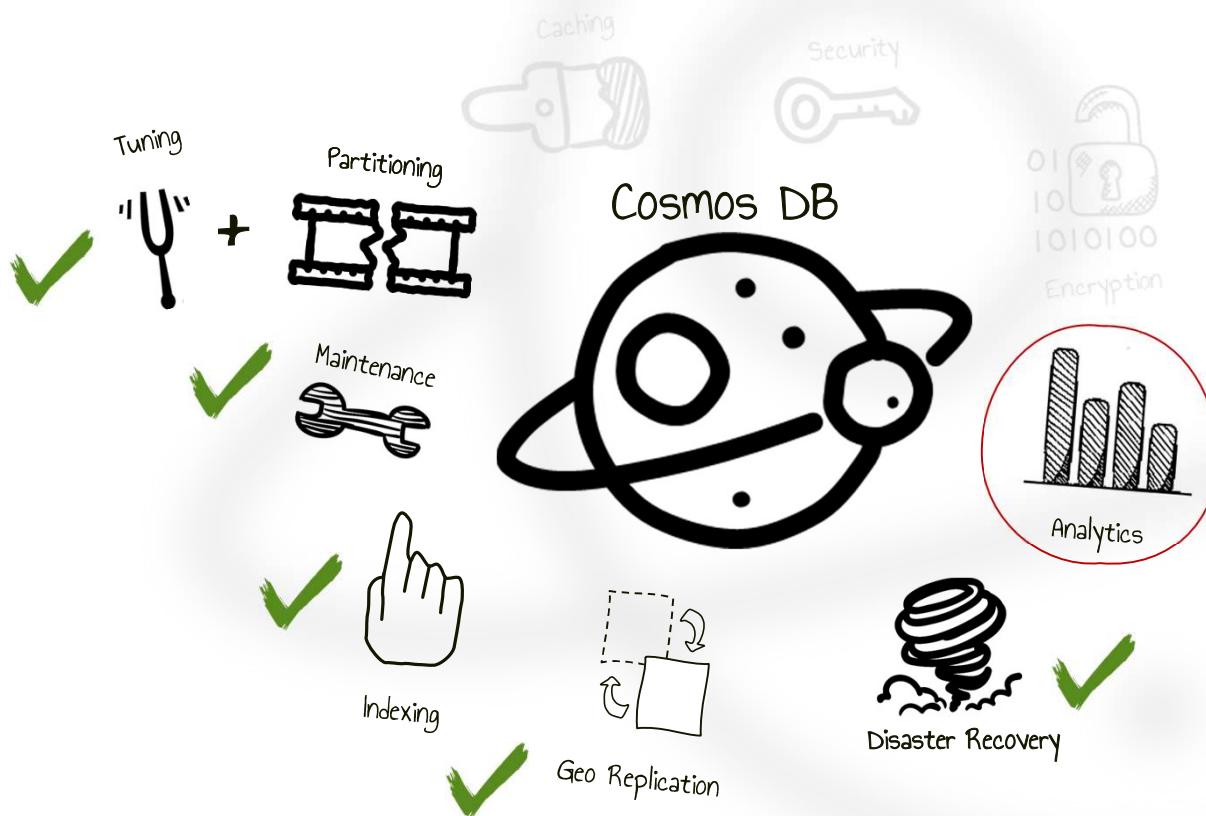
# Geo-Replication + Disaster Recovery



1. Strong
2. Bounded Staleness
3. Session
4. Consistent Prefix
5. Eventual

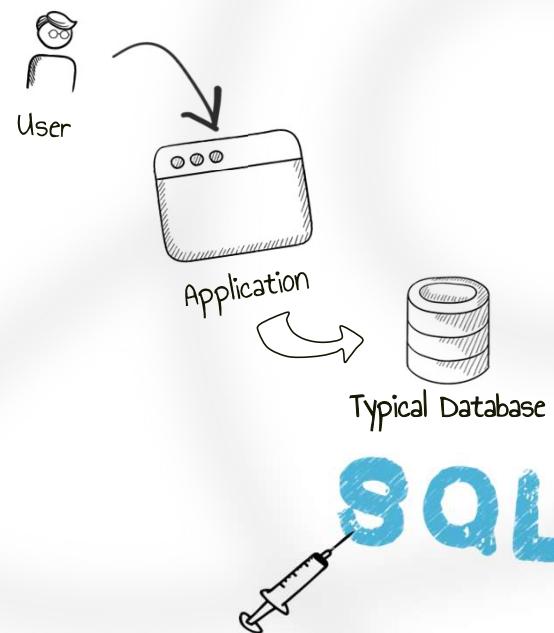
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# Azure Cosmos DB



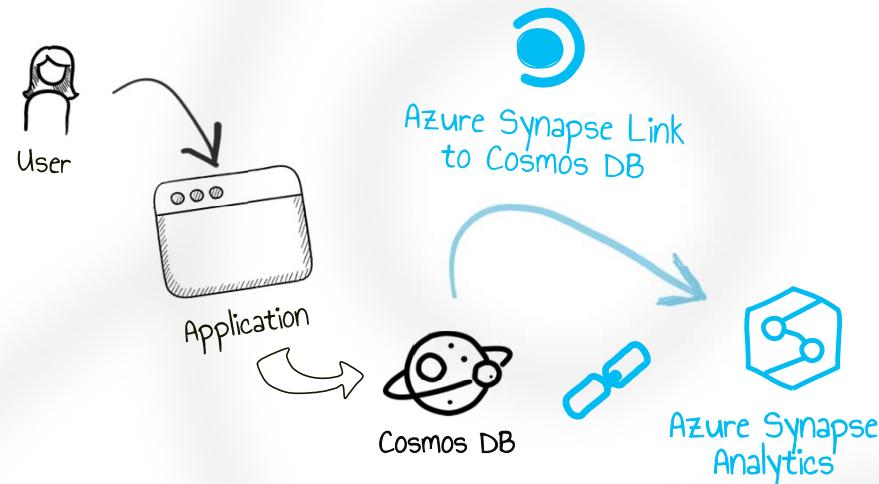
tags: azure, cosmos db, synapse, aggregation

# Analytics



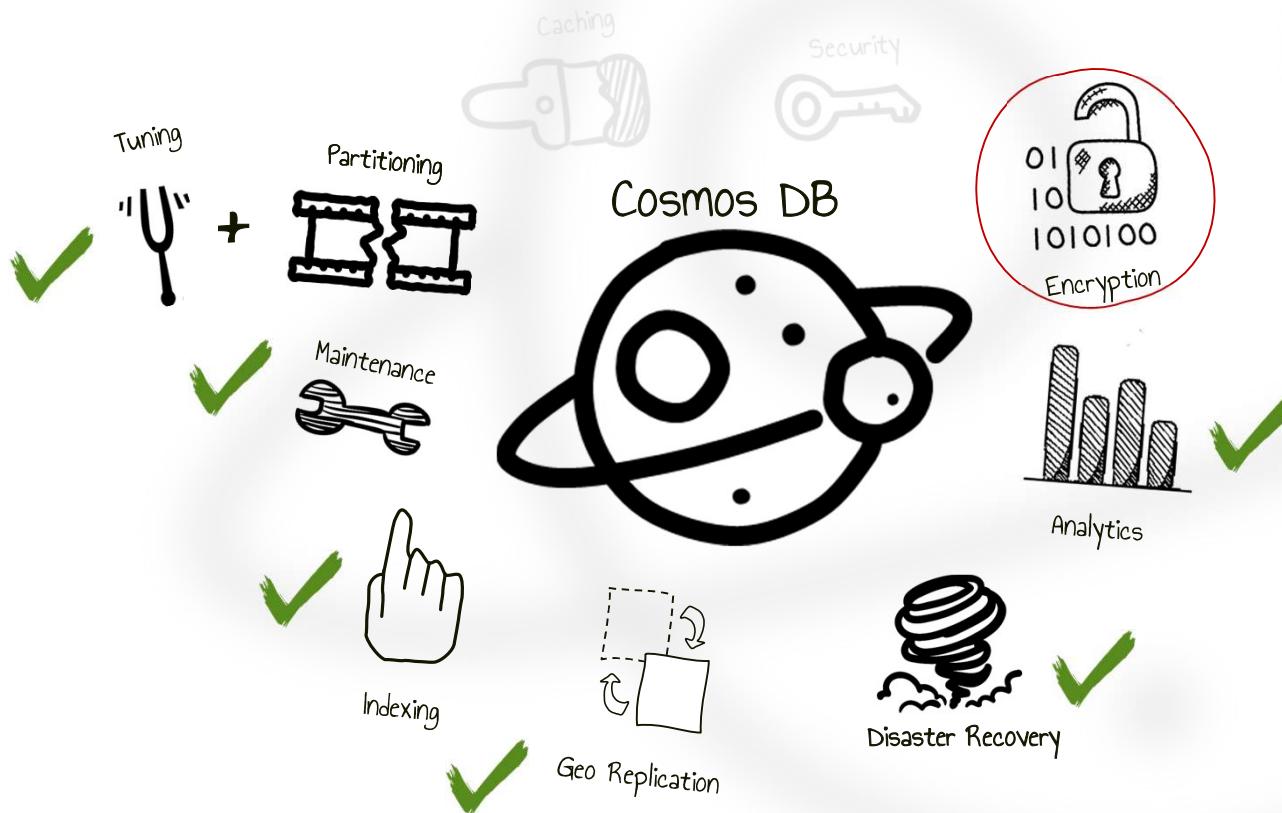
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# Analytics



**tags:** azure, cosmos db, capability, database, application

# Azure Cosmos DB



**tags:** database, security

# Encryption versus Masking

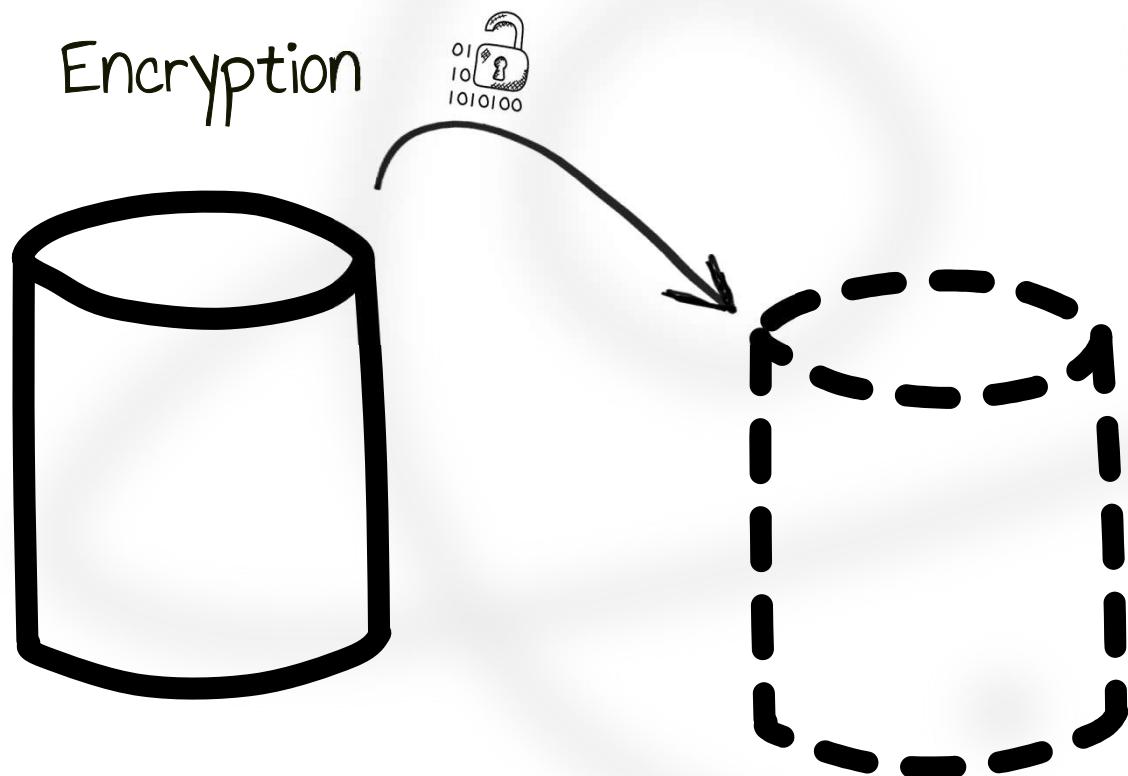
Encryption



Masking

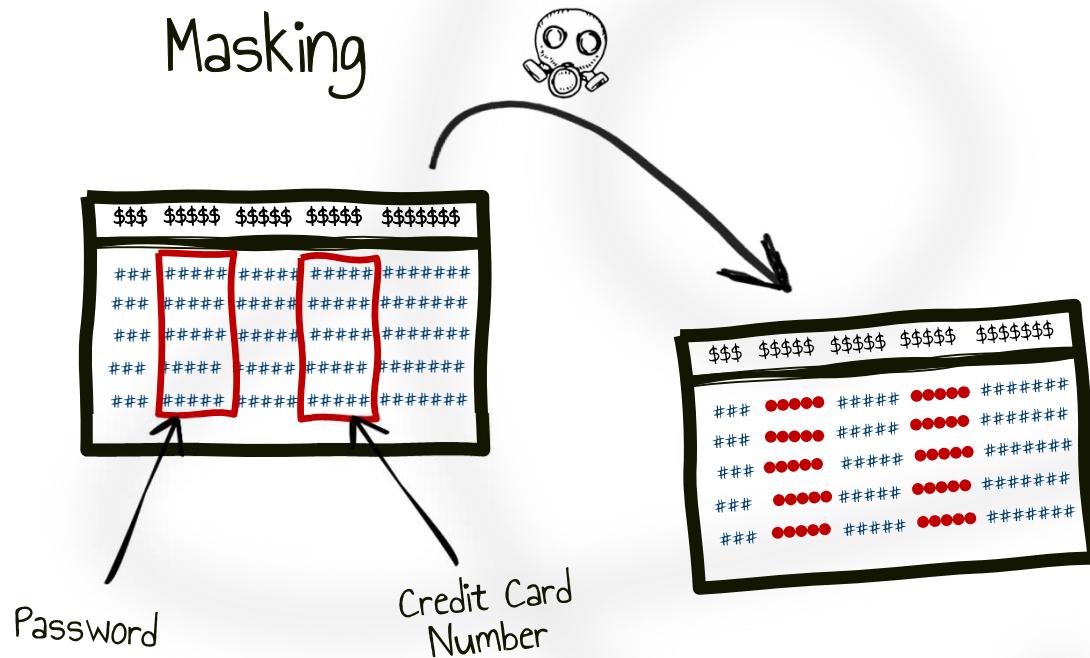
tags: database, security

## Encryption versus Masking



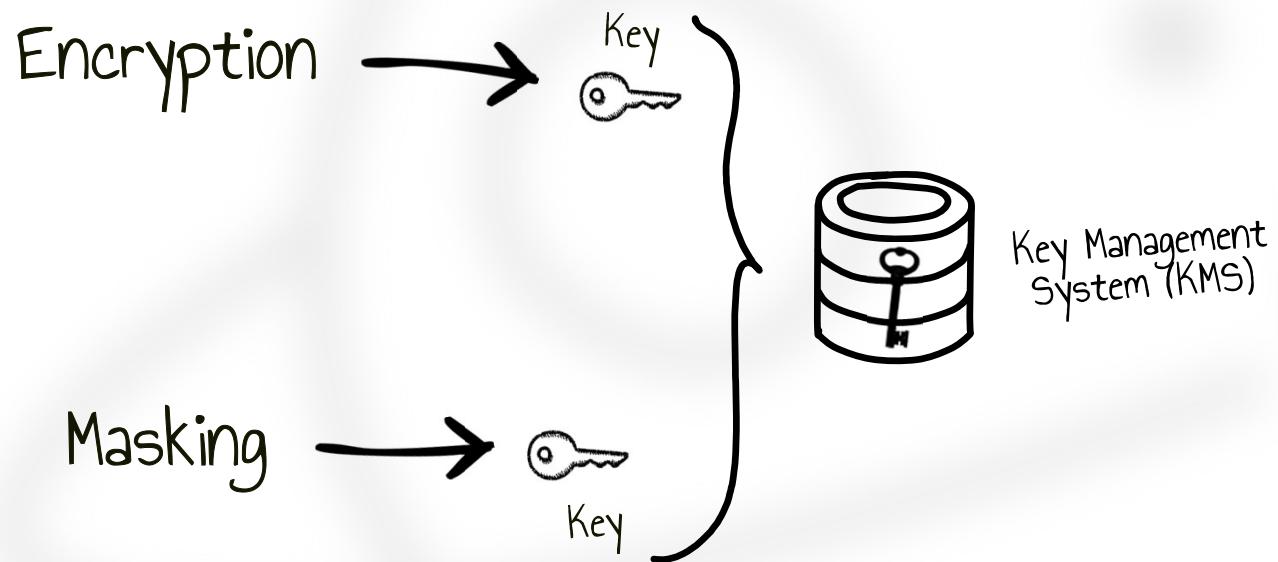
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# Encryption versus Masking



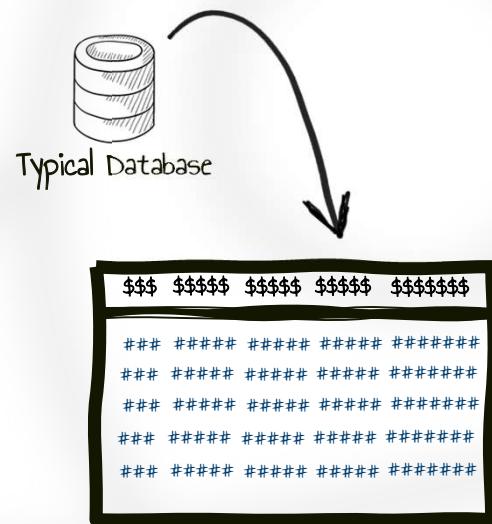
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## Encryption versus Masking



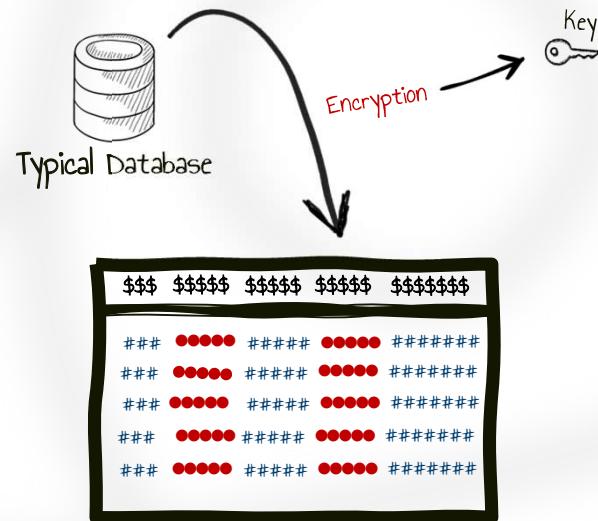
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# Encryption



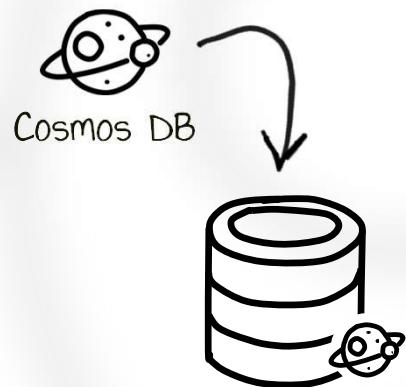
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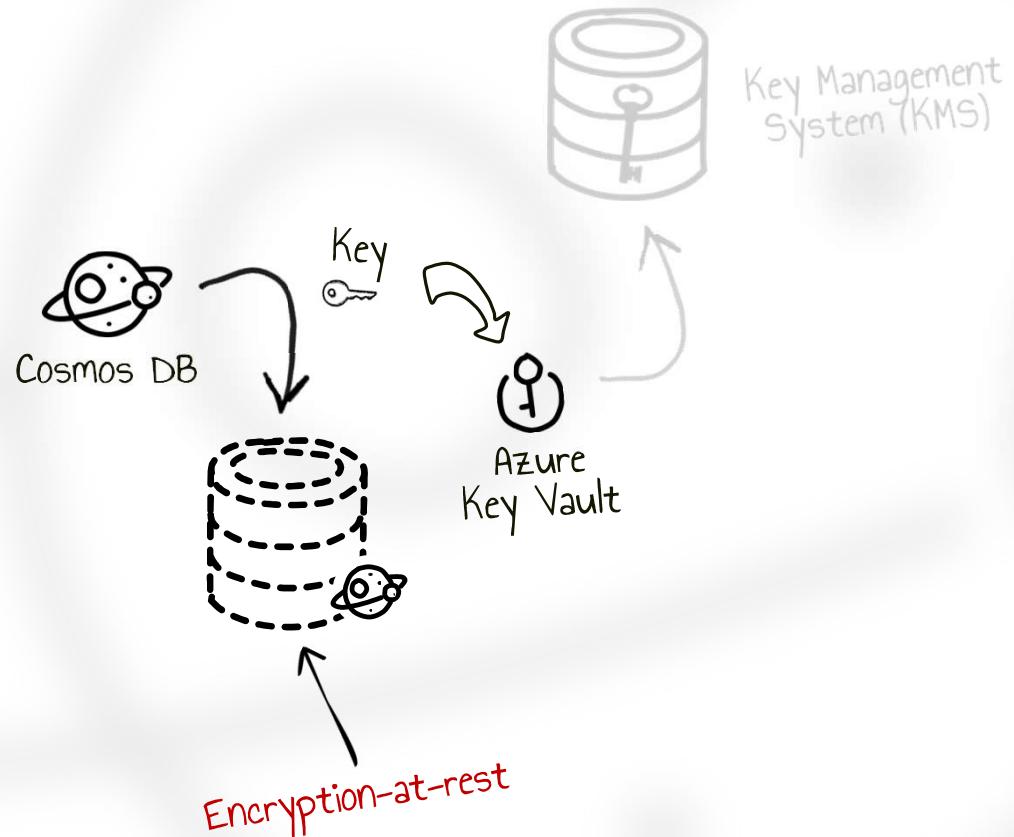
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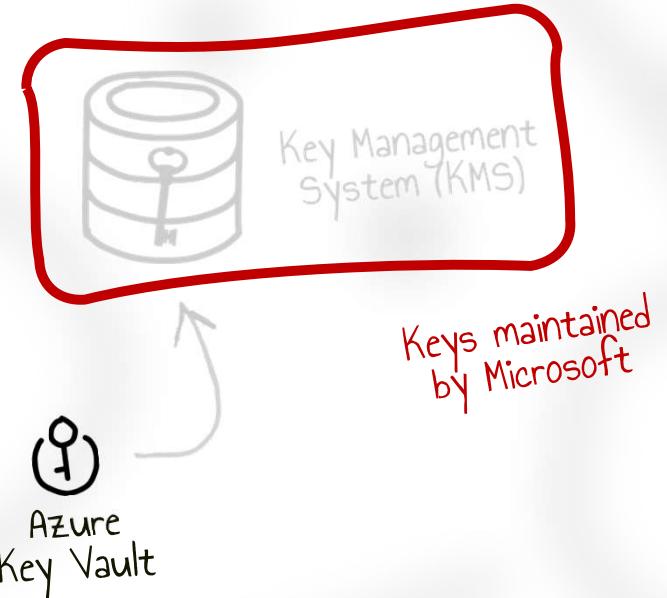
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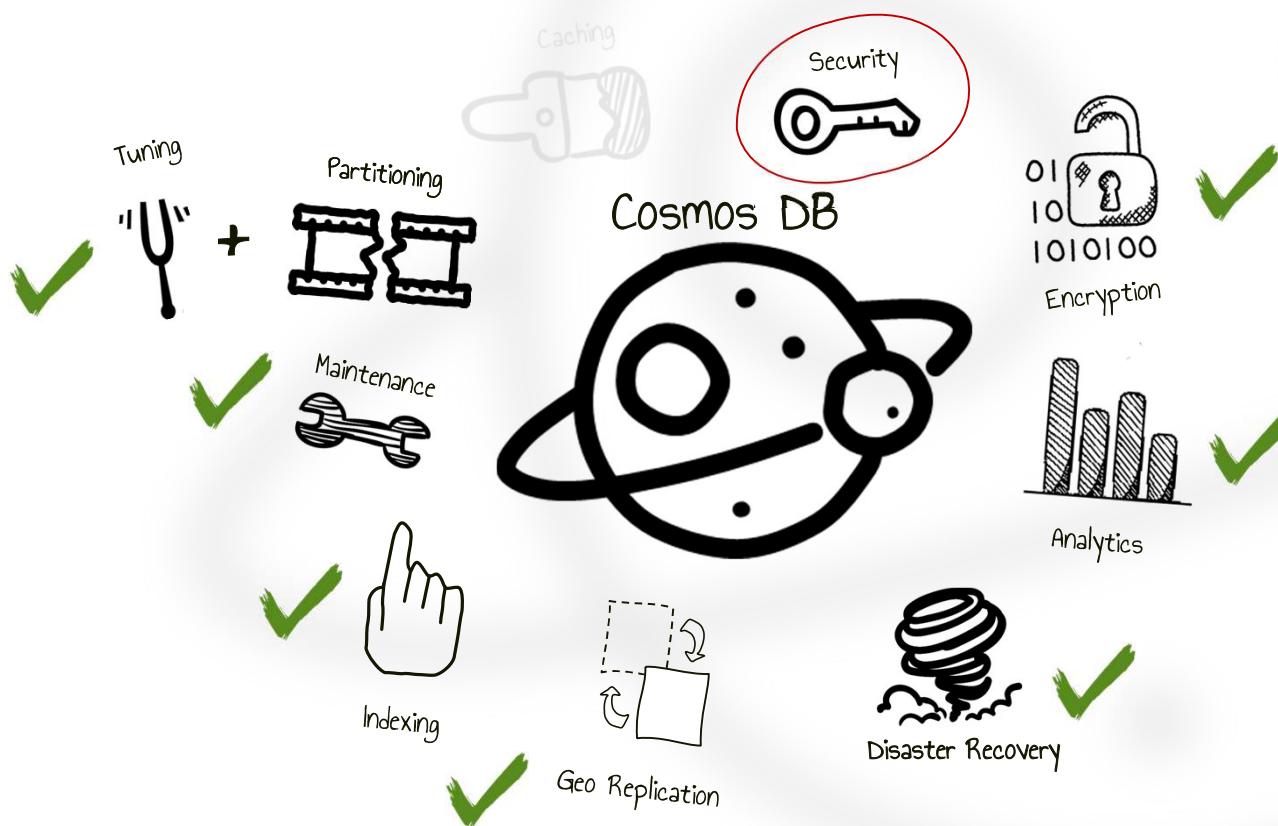
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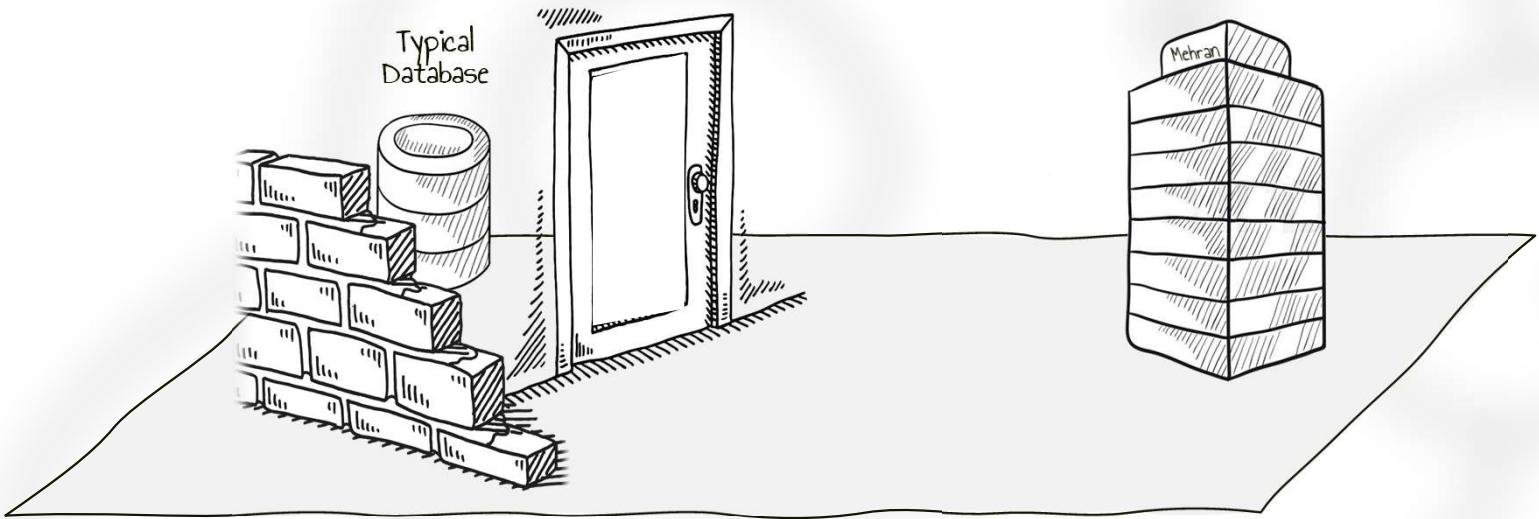
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# Azure Cosmos DB



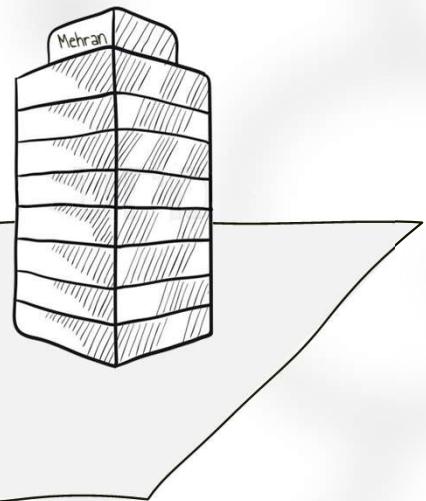
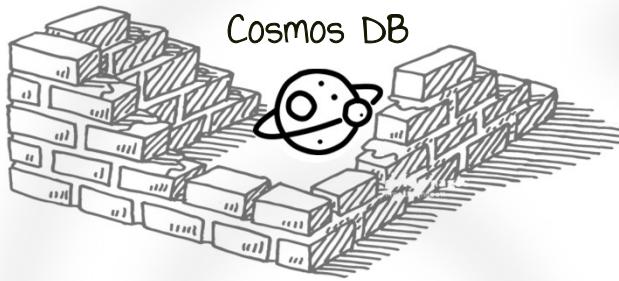
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# Security



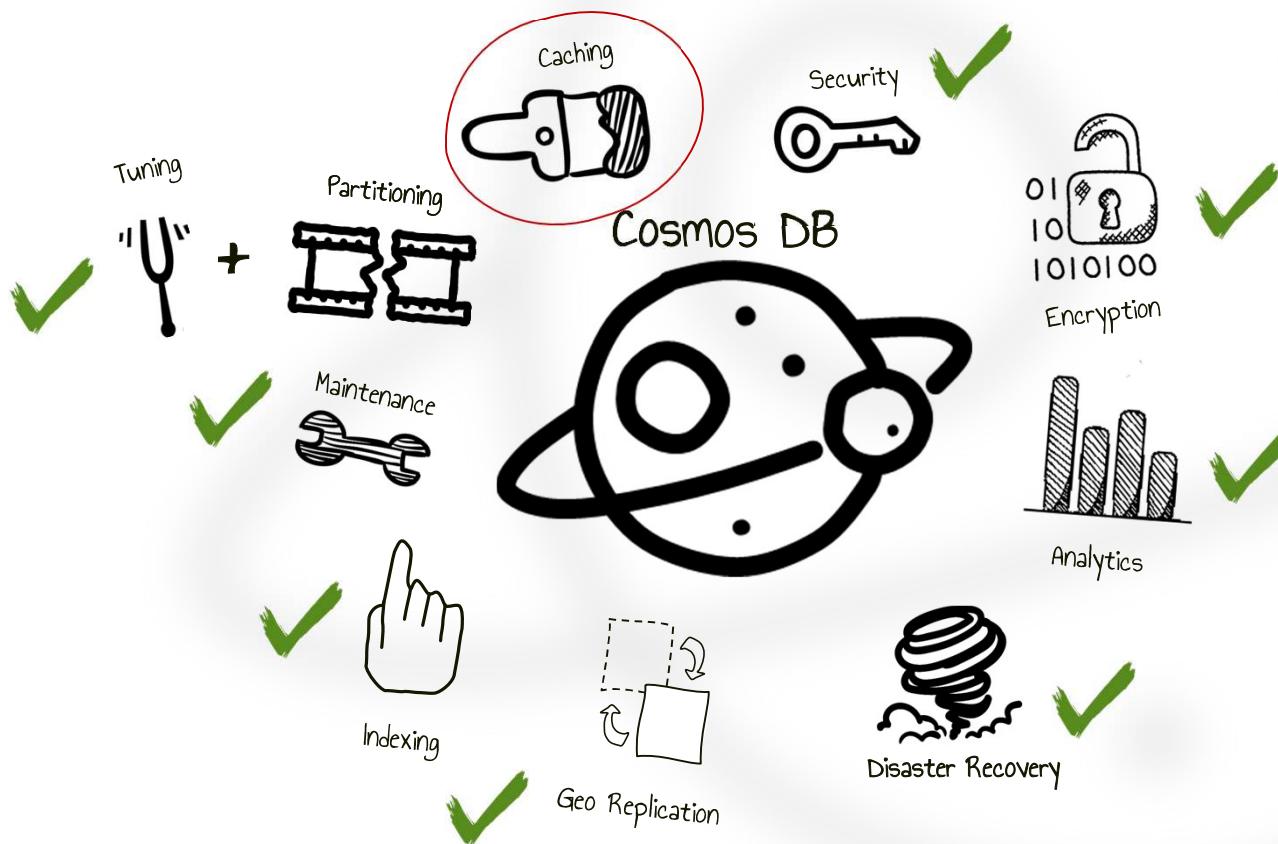
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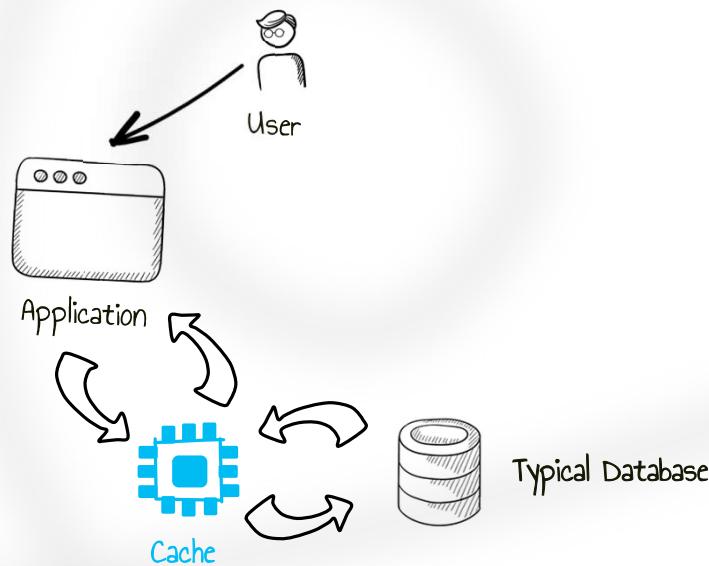
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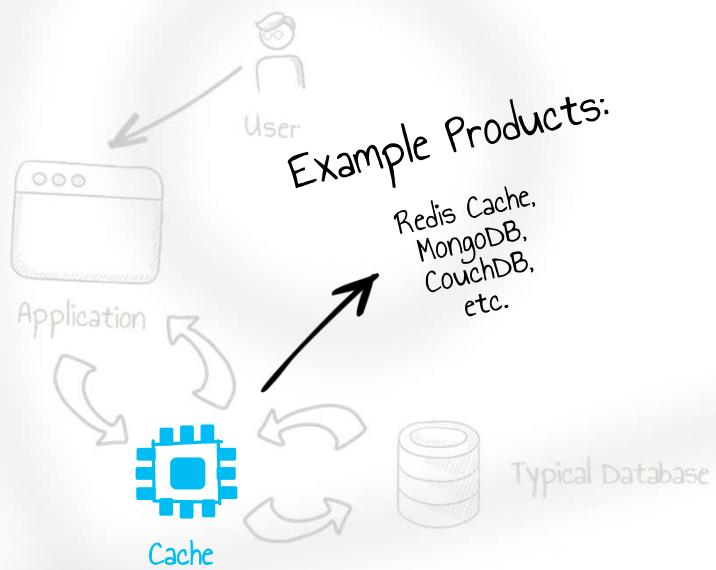
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# Caching



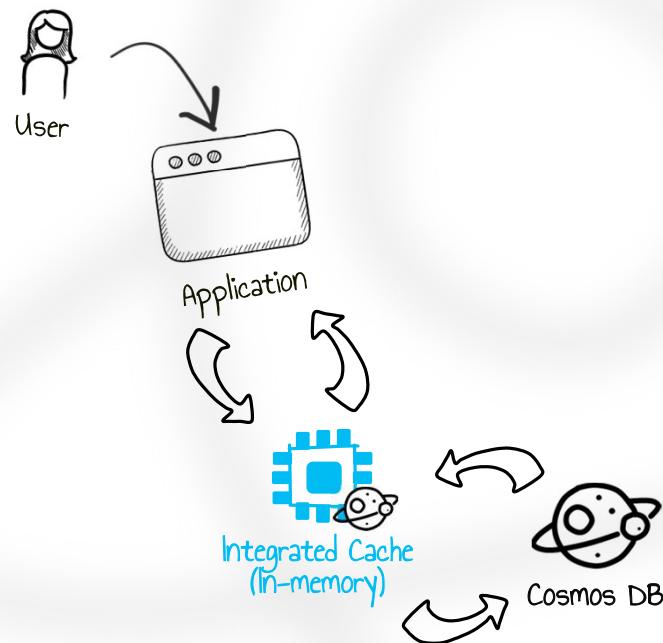
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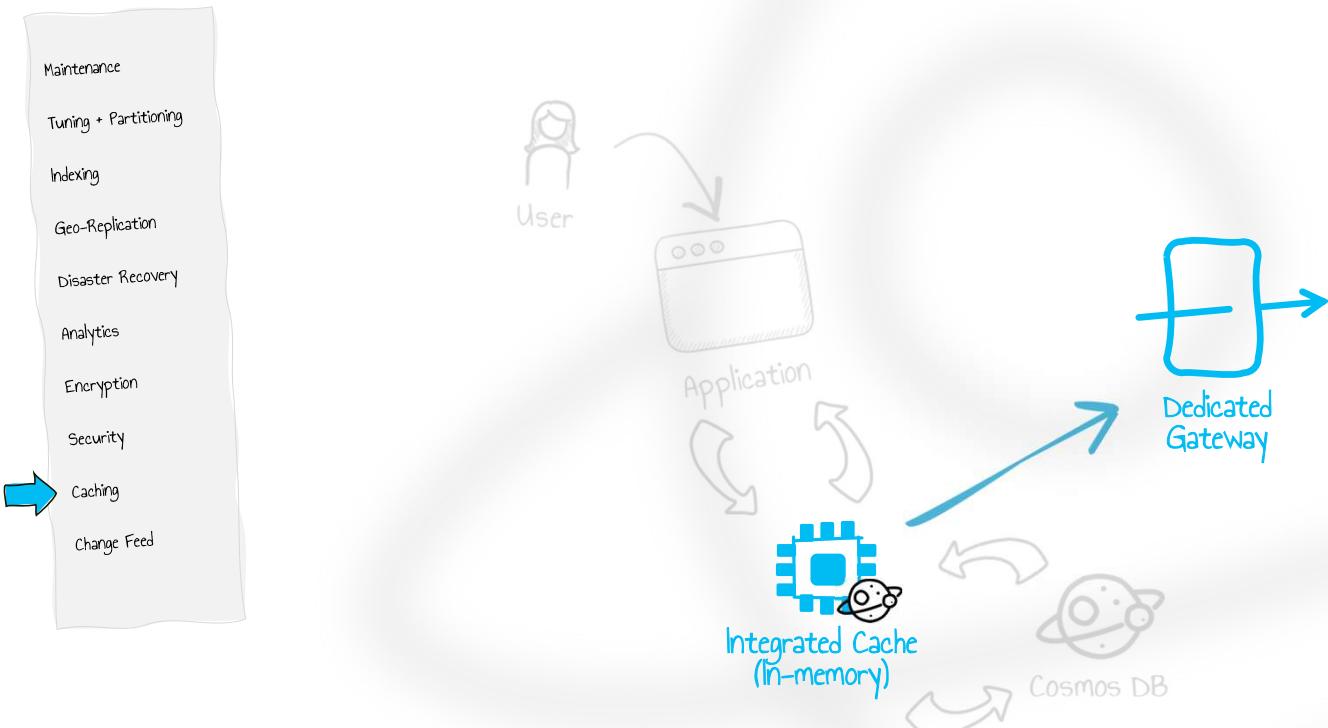
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# Caching



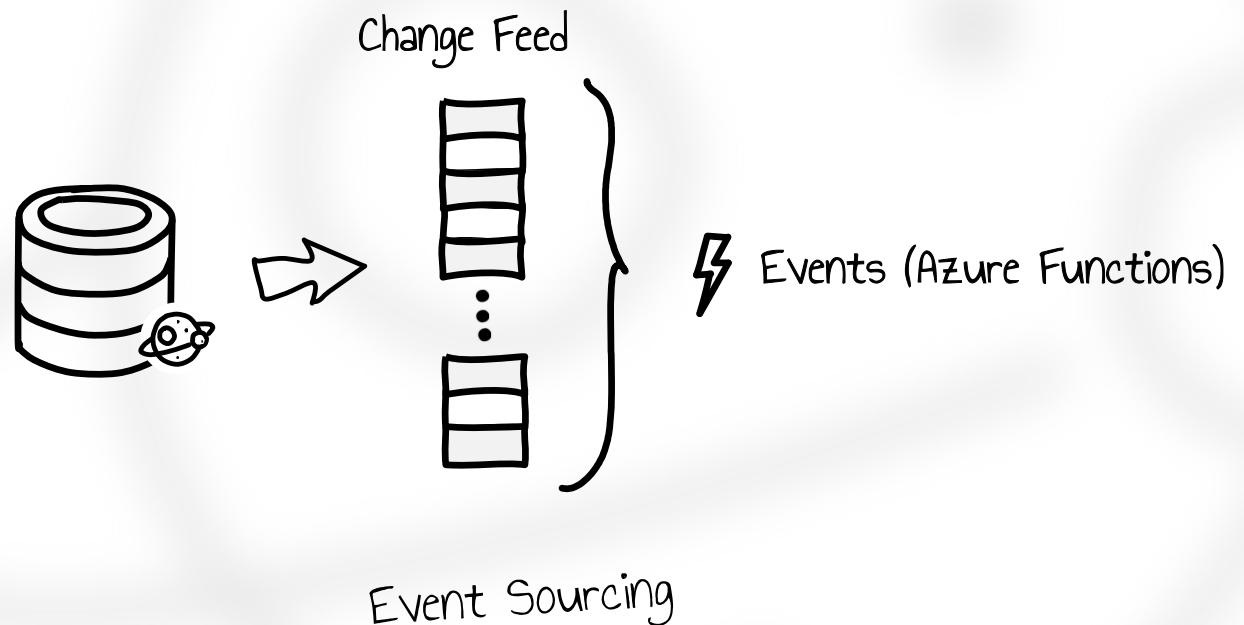
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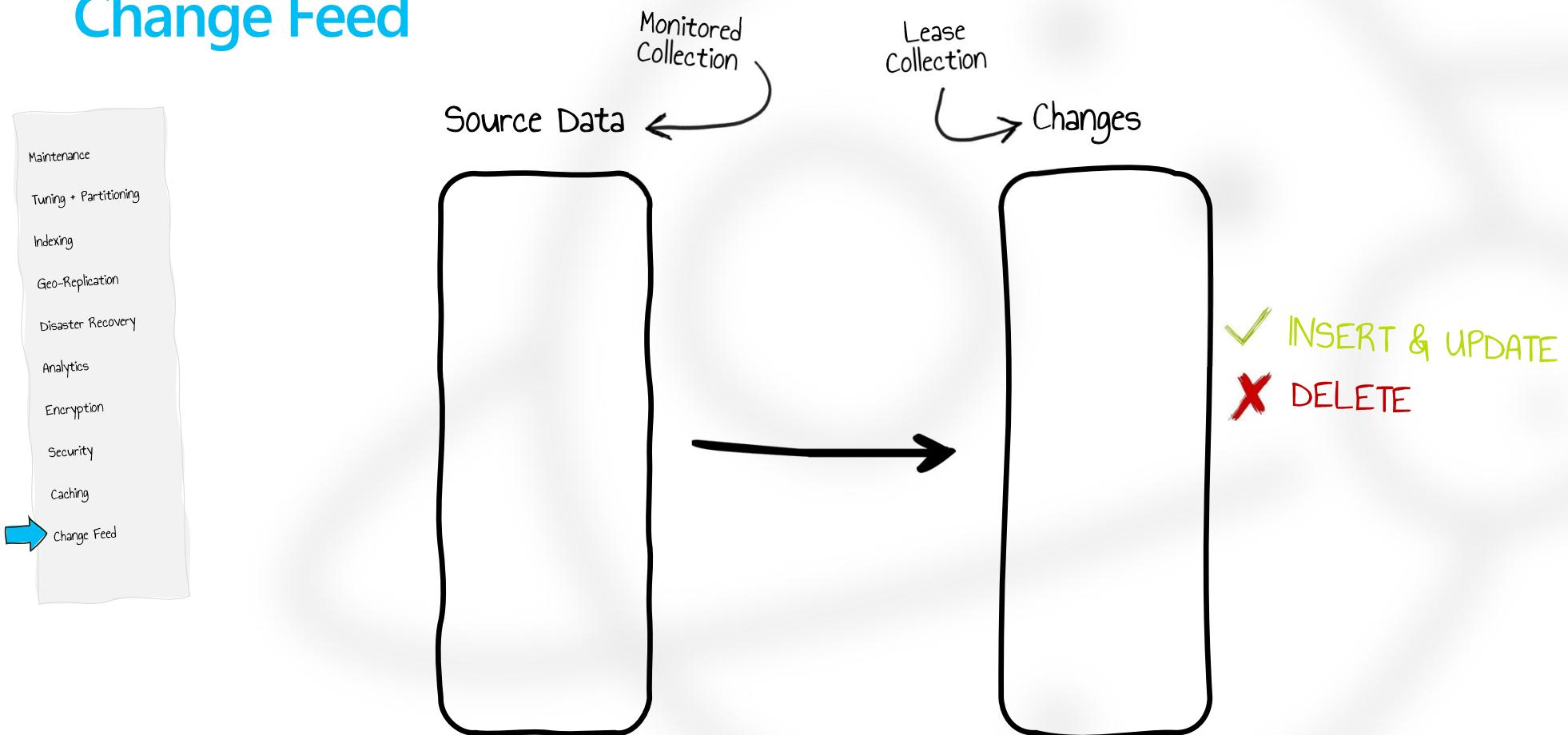
tags: azure, cosmos db, changes, events, lease

# Change Feed

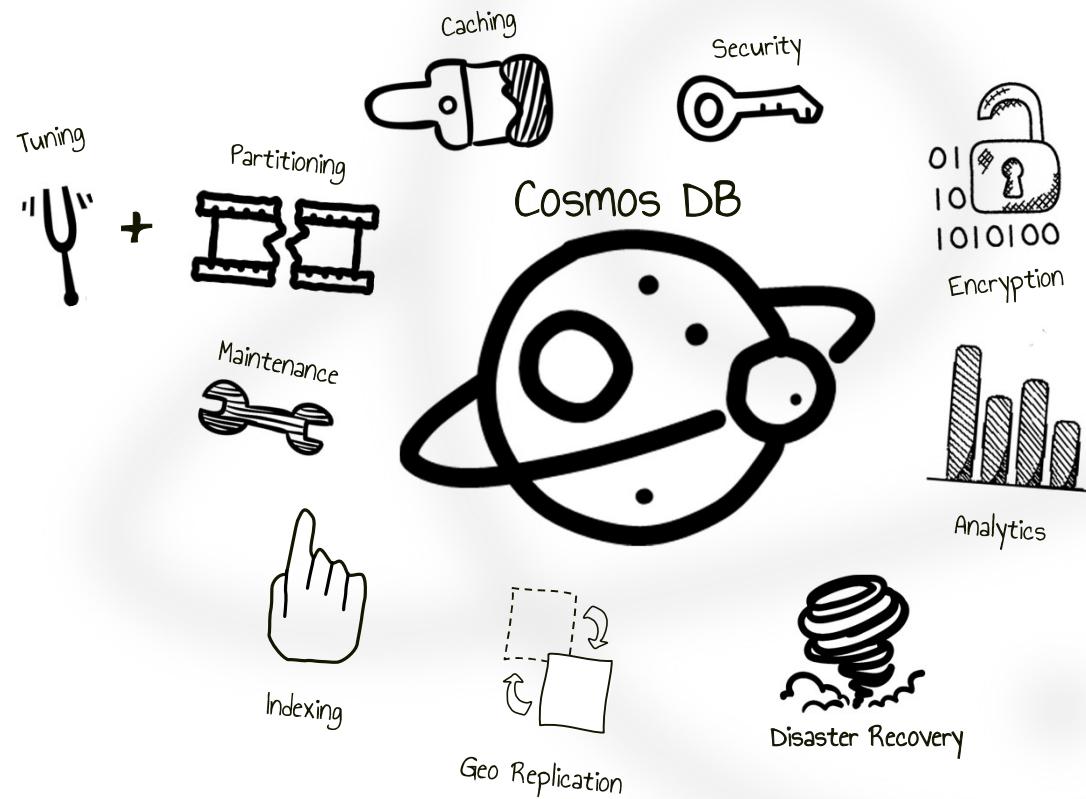


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# Change Feed



# Section Recap



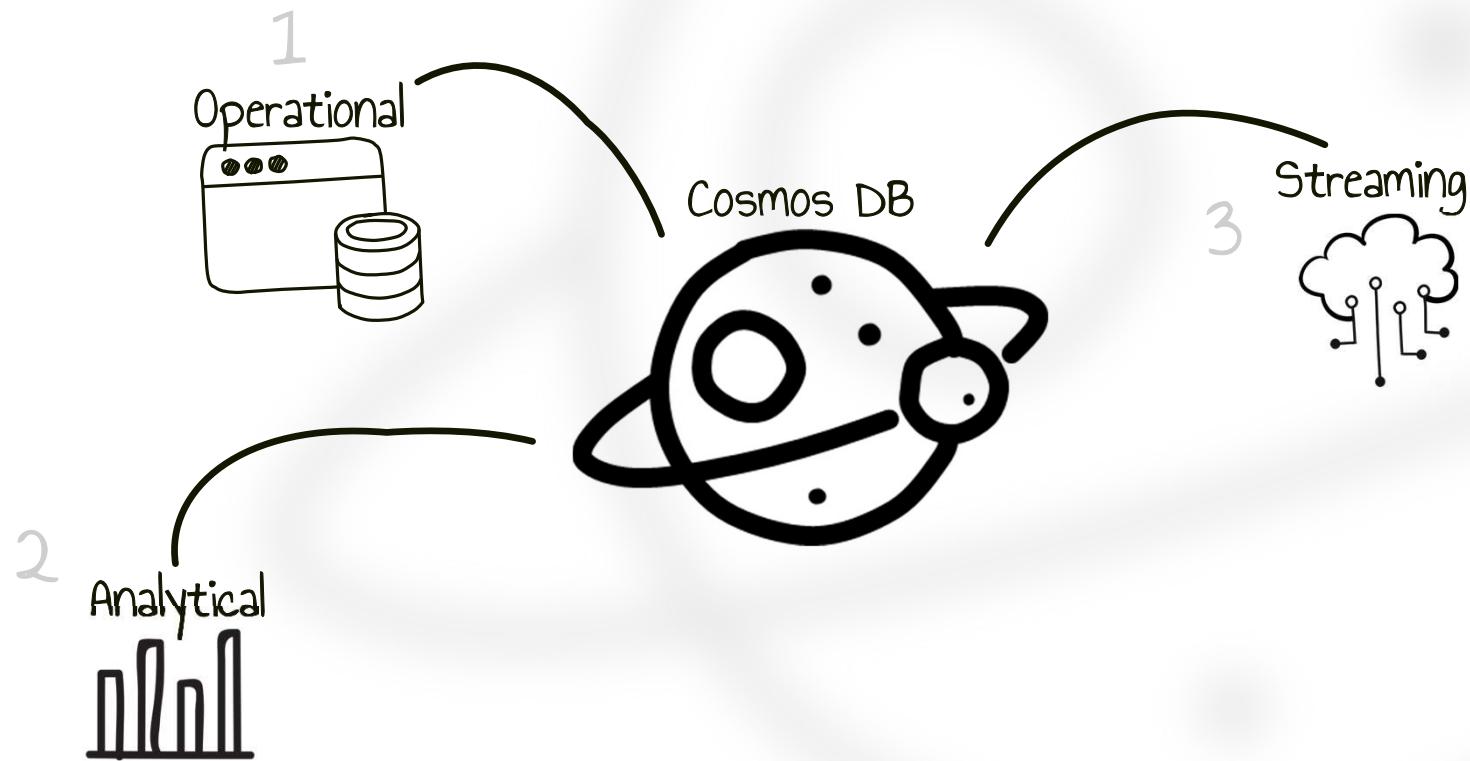
# Workloads

Scenarios for using Azure Cosmos DB



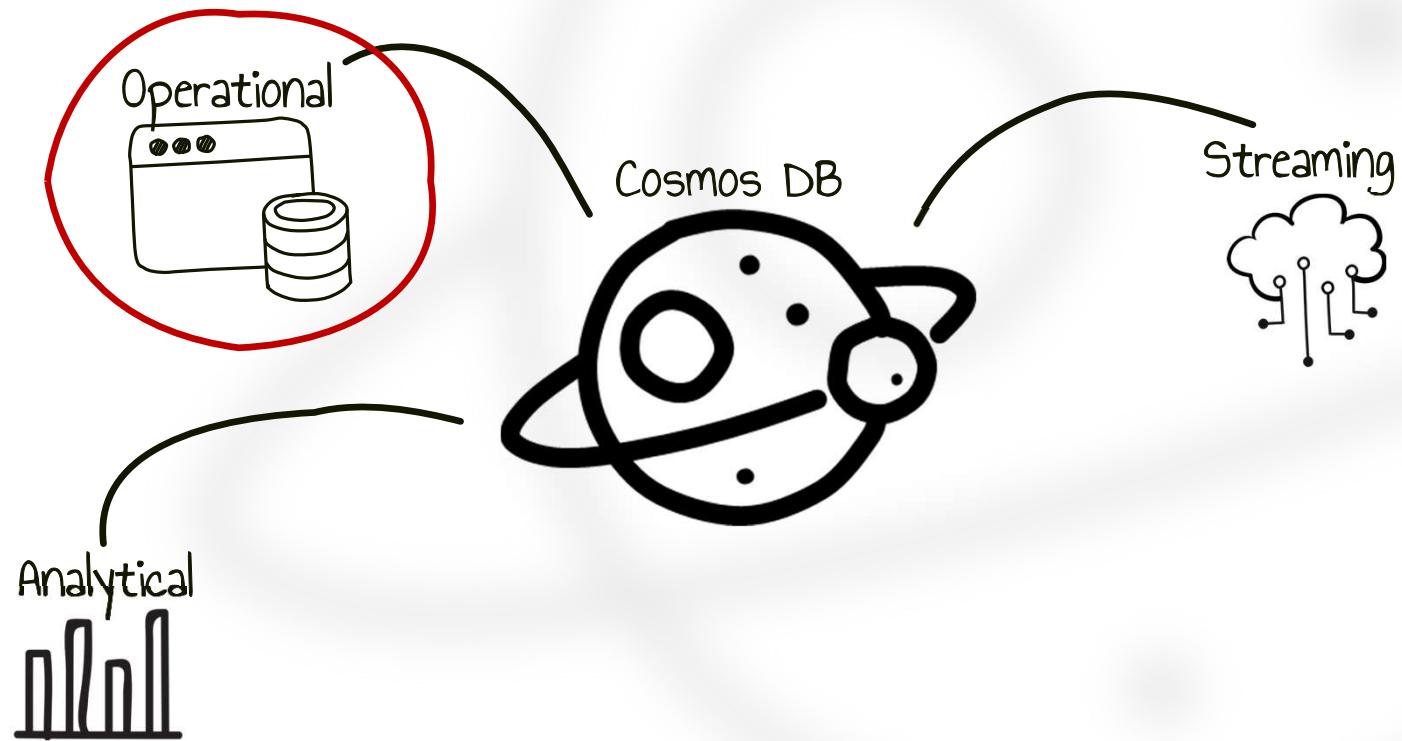
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# Workloads



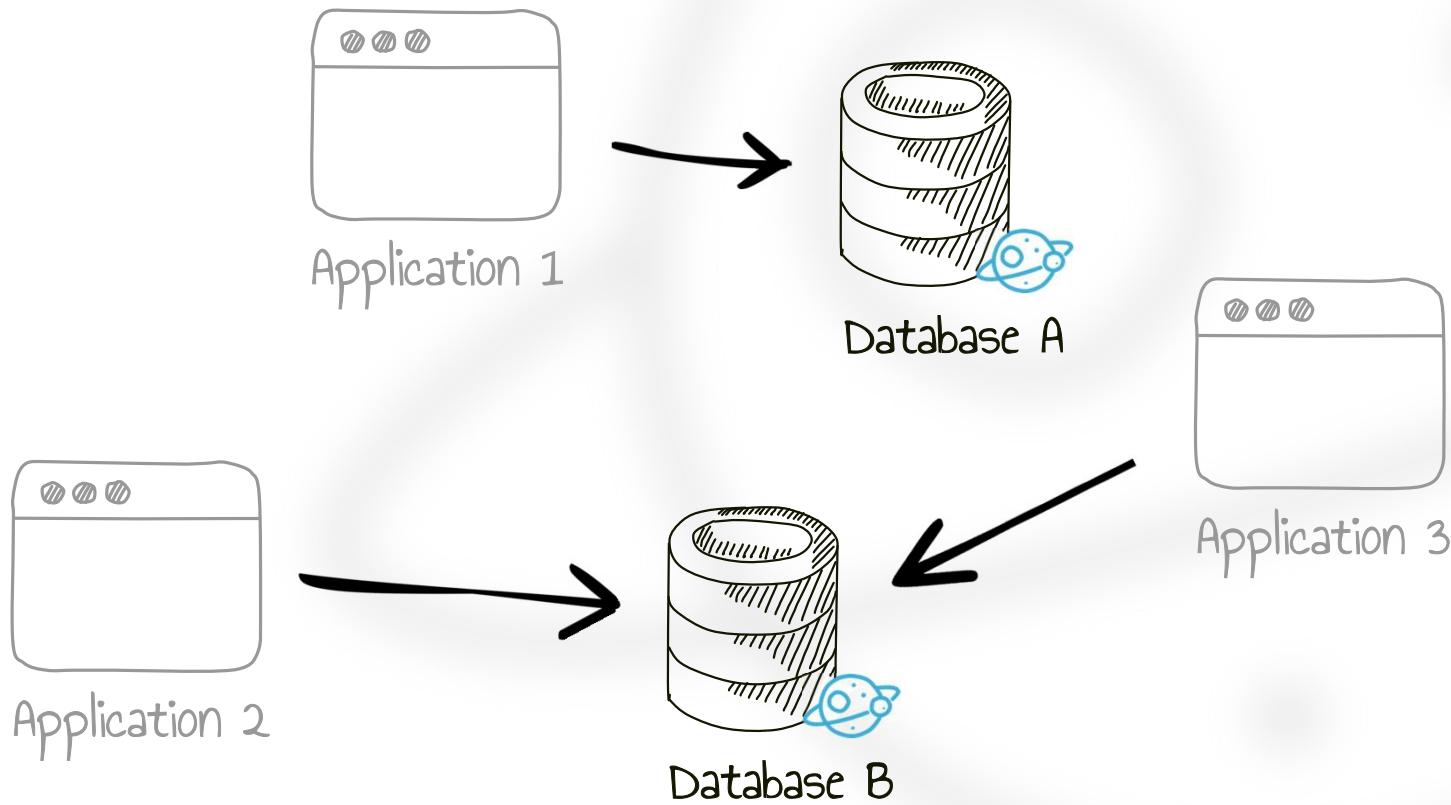
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# Workloads



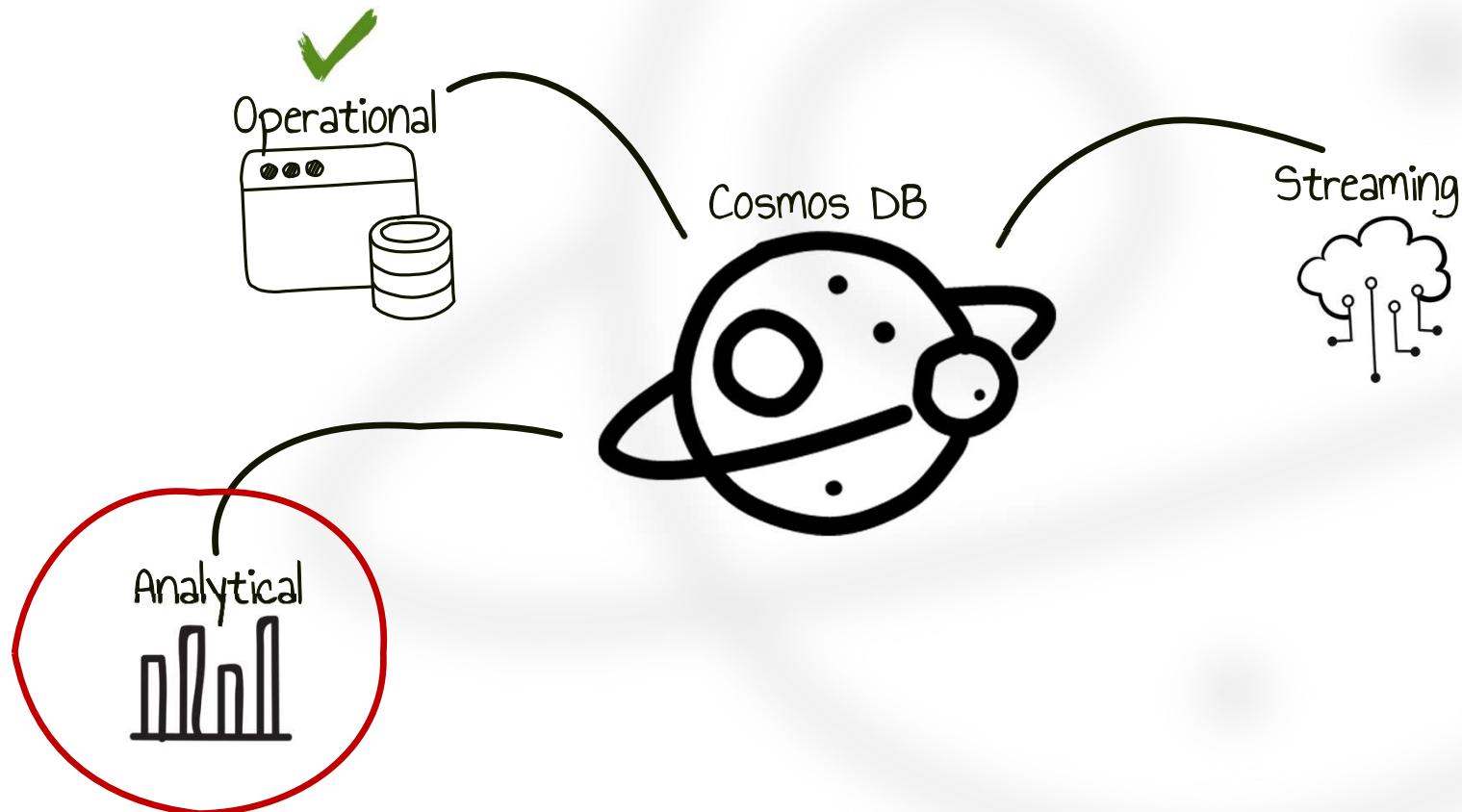
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# Operational Workloads



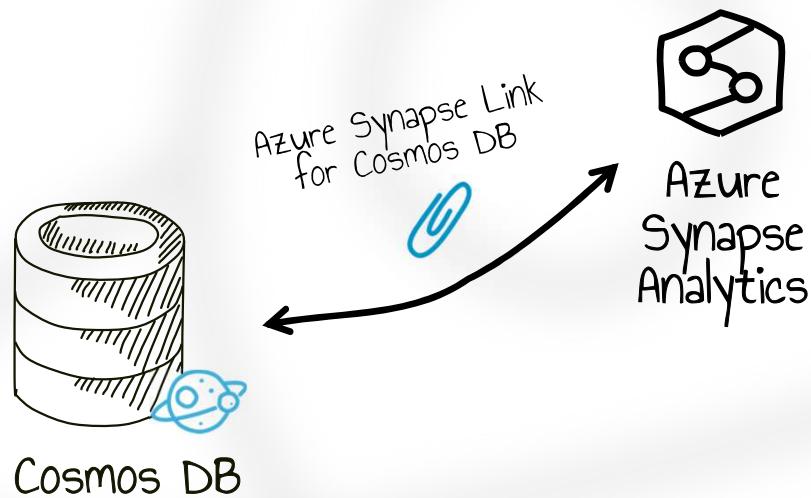
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# Workloads



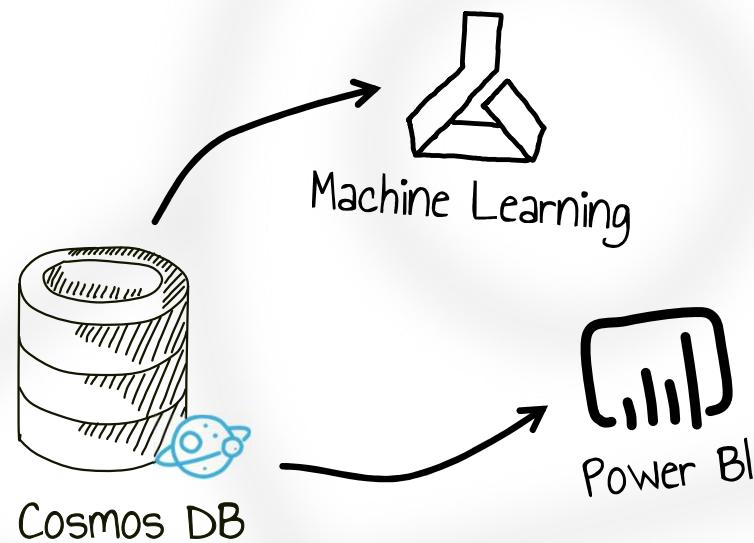
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# Analytical Workloads



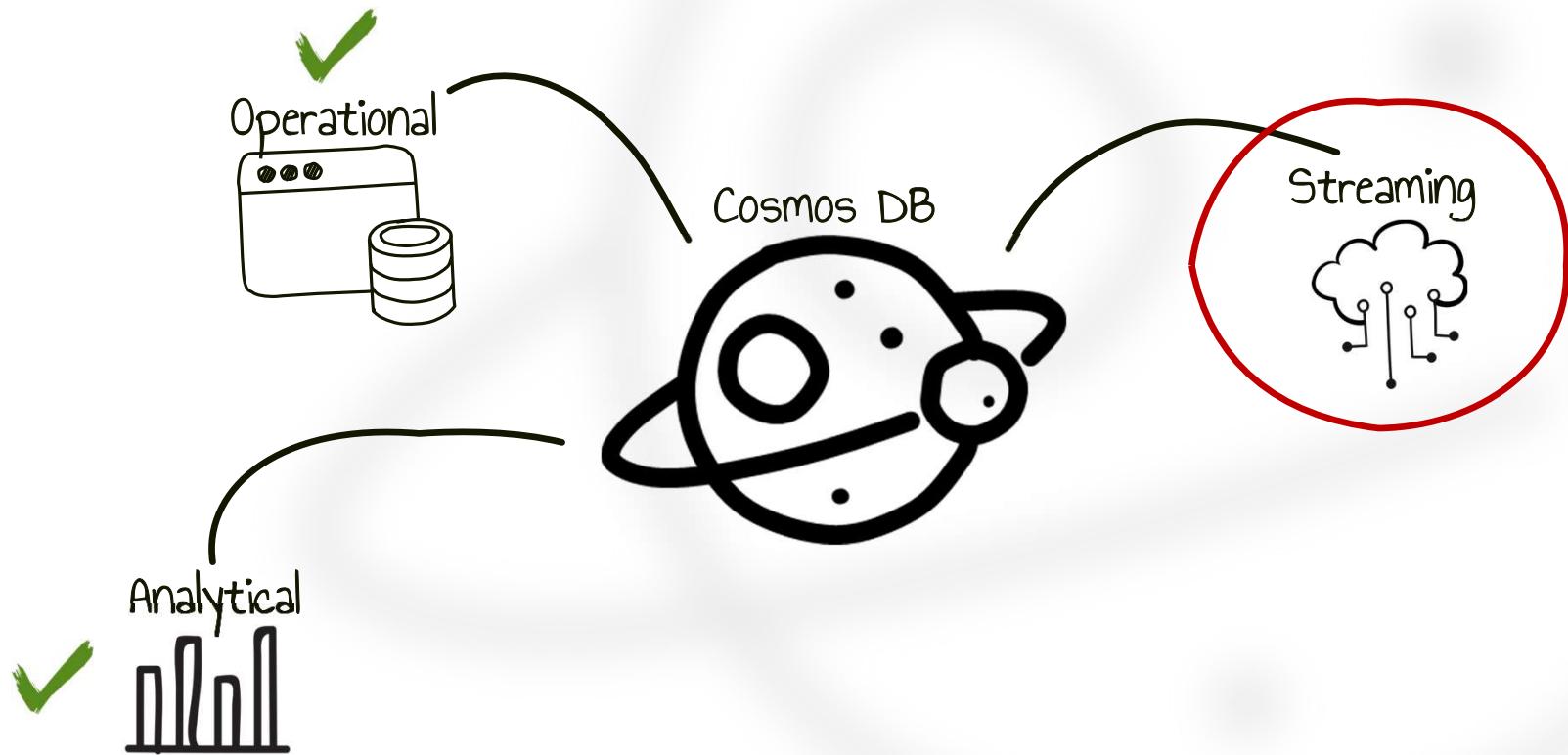
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# Analytical Workloads



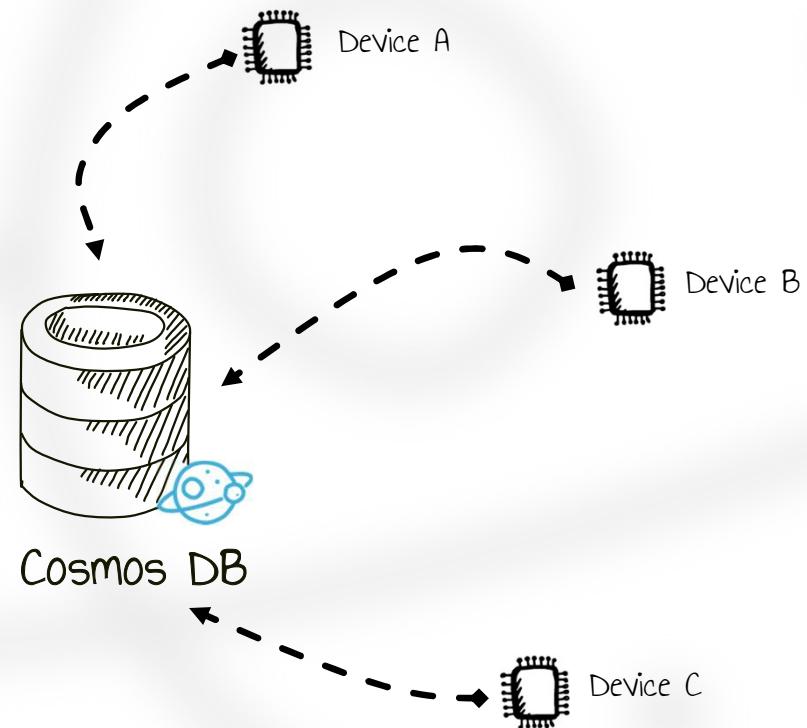
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# Workloads



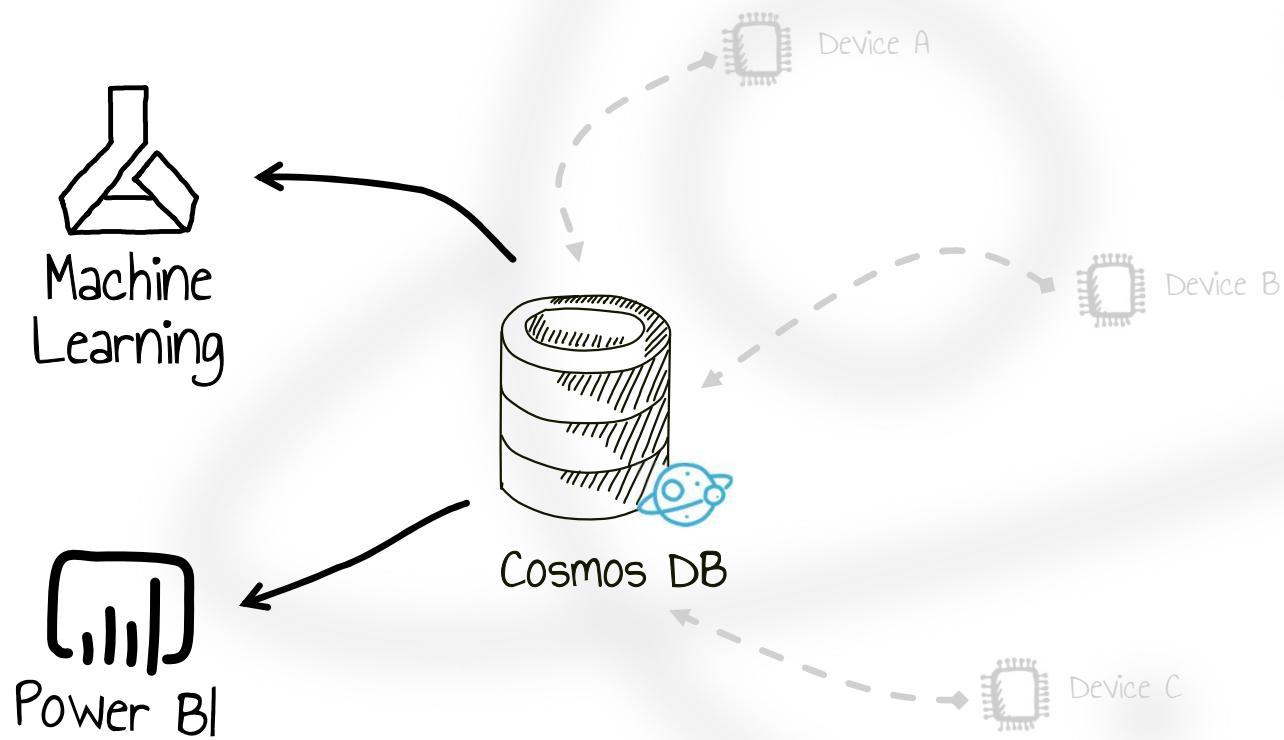
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# Data Streaming Workloads



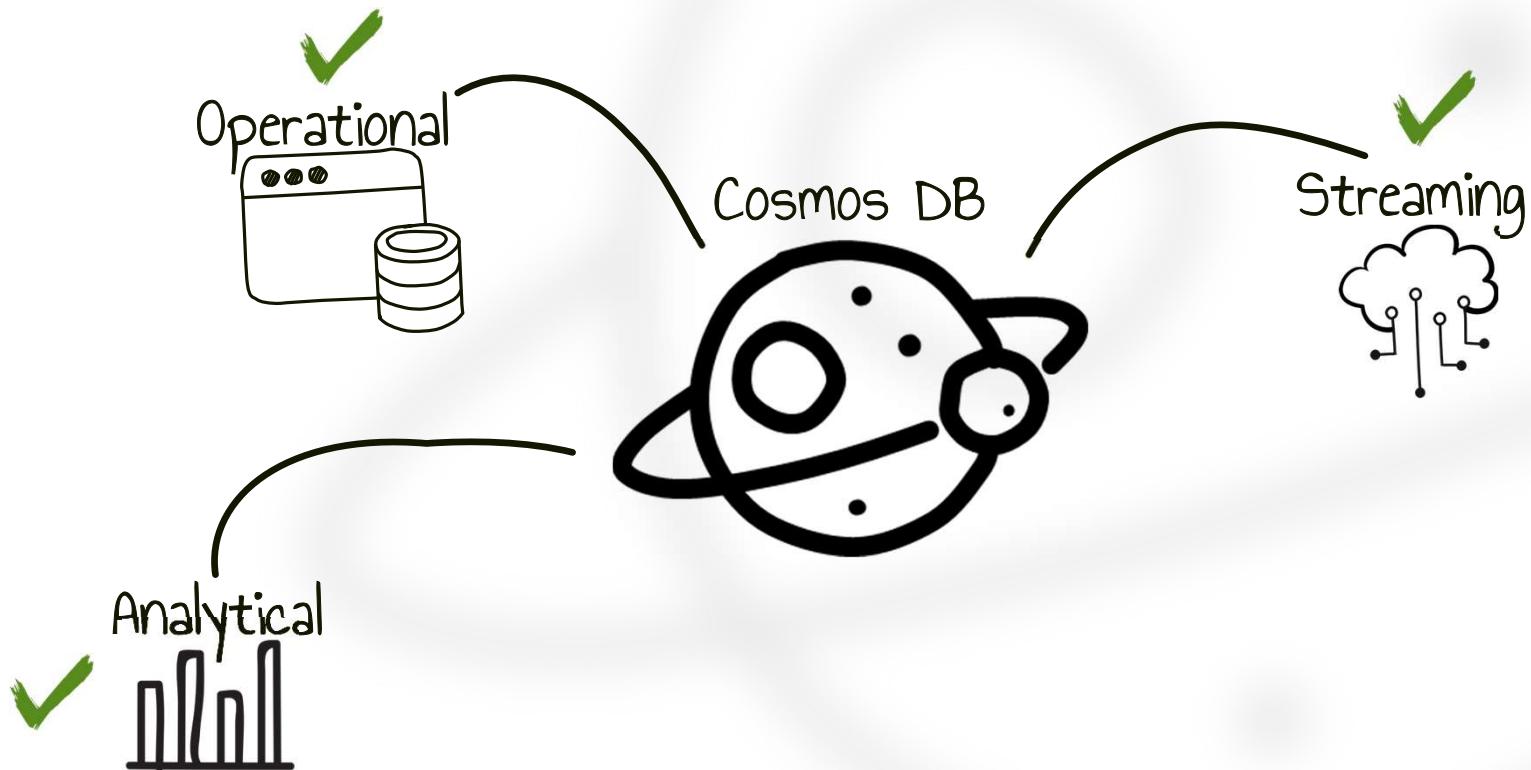
tags: azure, cosmos db, iot

# Data Streaming Workloads



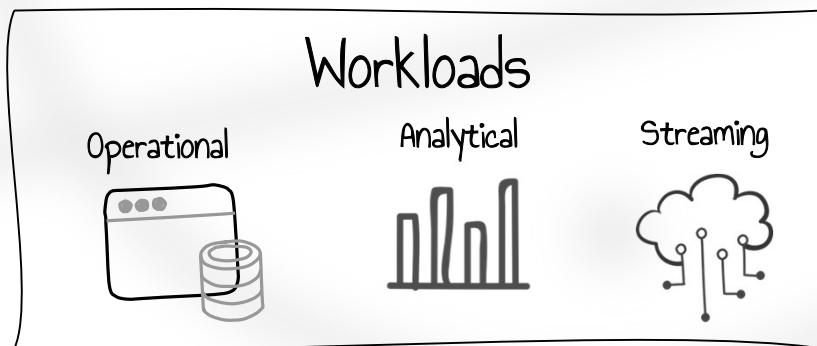
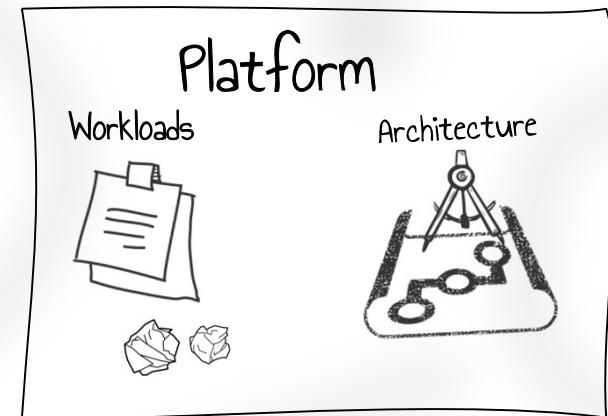
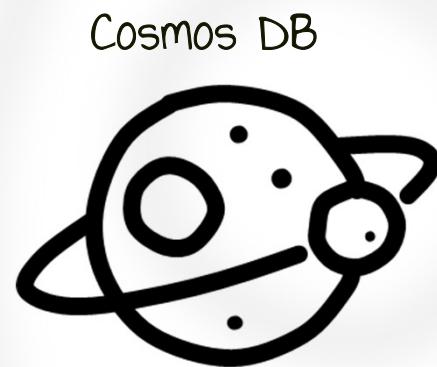
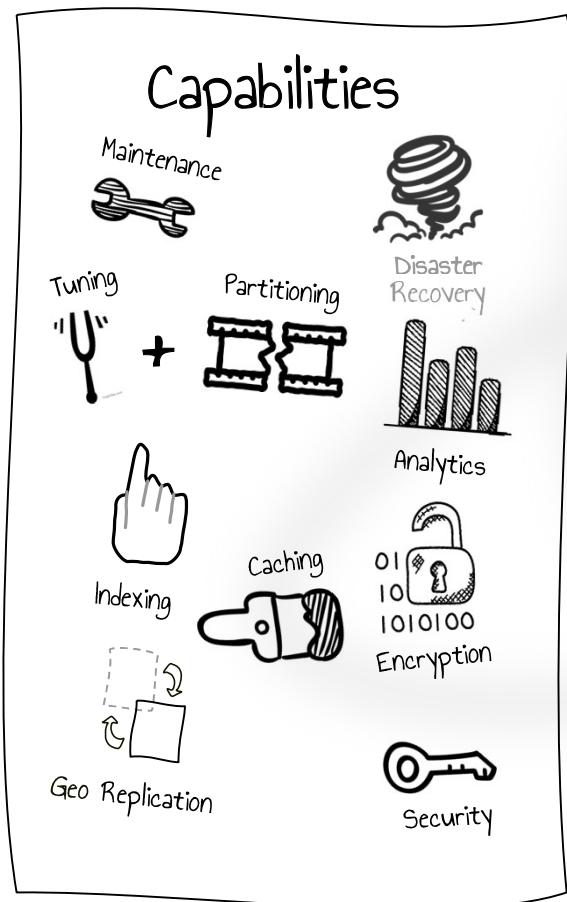
**tags:** azure, cosmos db, scenario, use-case

# Workloads



**tags:** azure, cosmos db, platform, capability, workload

## Recap



Thank You!



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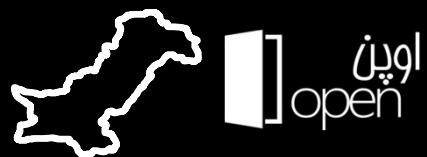
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