



Azure Cosmos DB

An Overview



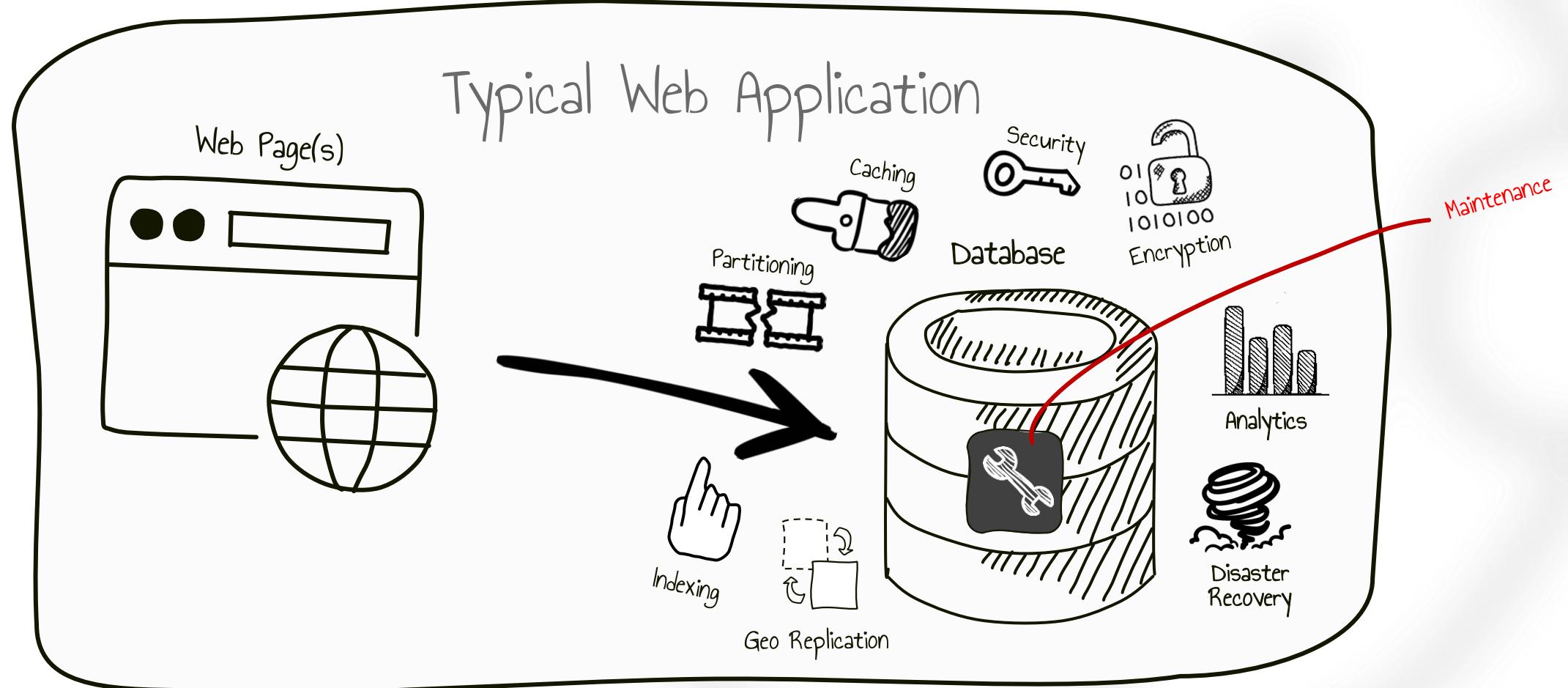
Adnan Hashmi

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

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

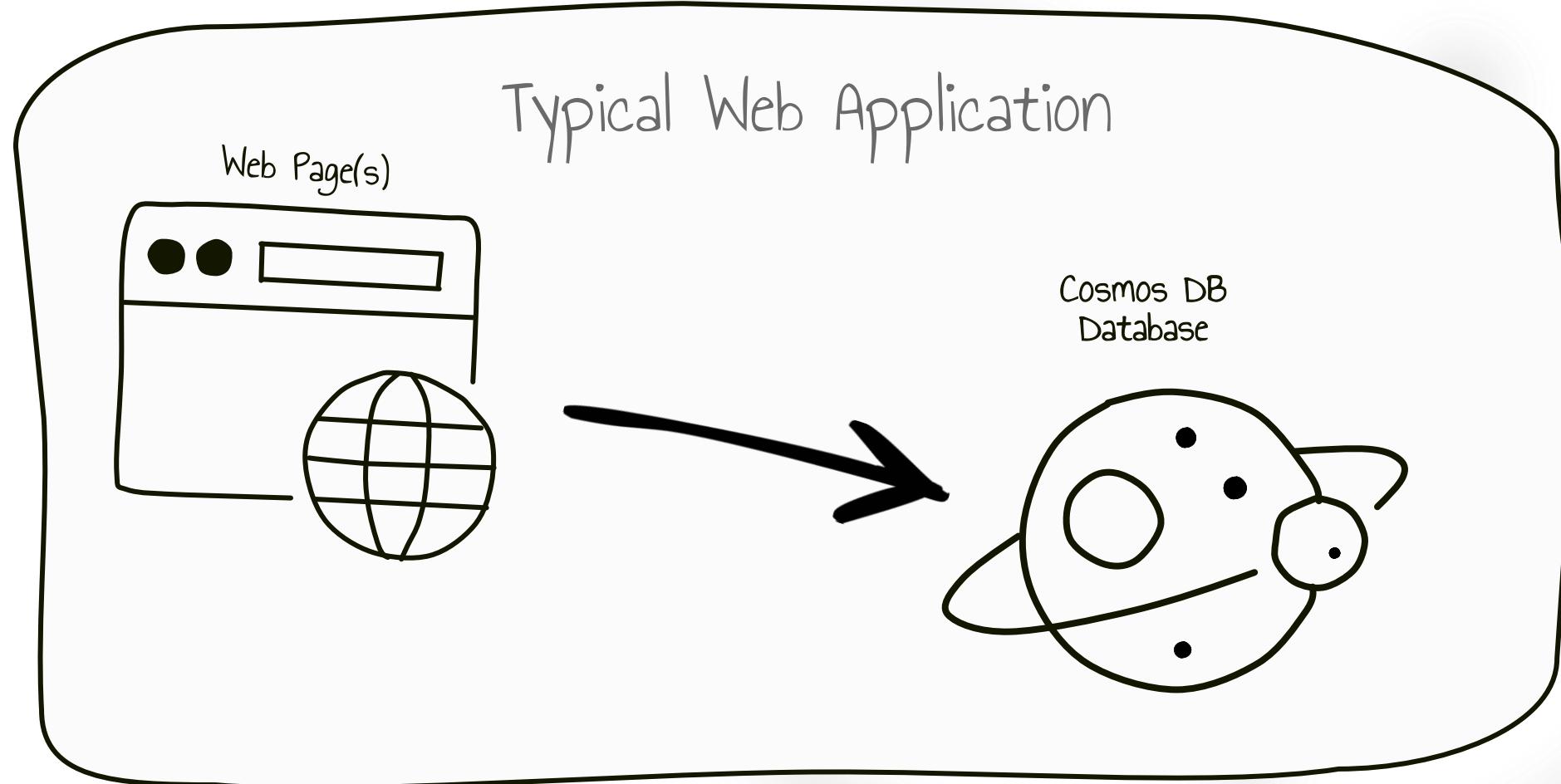
tags: azure, cosmos db, data, organization

WHY Azure Cosmos DB?



tags: azure, cosmos db, data, organization

WHY Azure Cosmos DB?



Platform

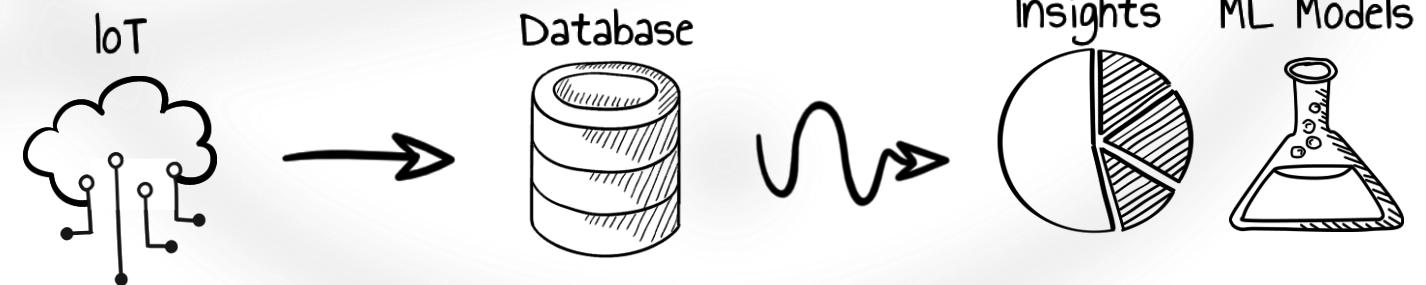
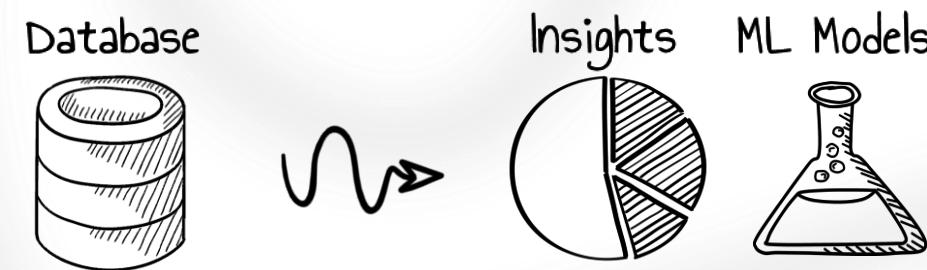
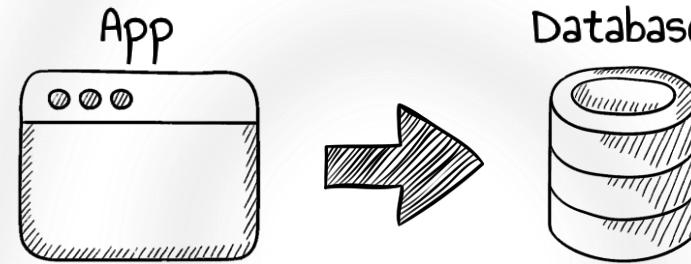
A closer look at Azure Cosmos DB



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

Application Workloads

- Operational
- Analytical
- Streaming



Application Workloads

- Operational



SQL Server
Azure Storage Tables
HBase
Cosmos DB ✓

- Analytical



Azure Data Lake
Hive + Apache Spark
Cosmos DB ✓

- Streaming

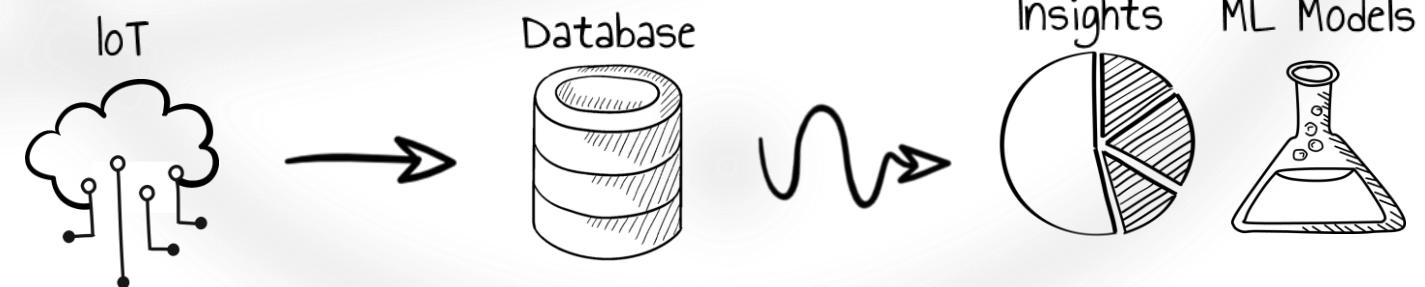
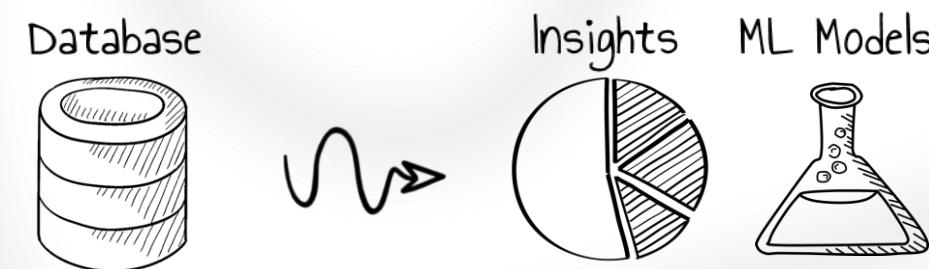
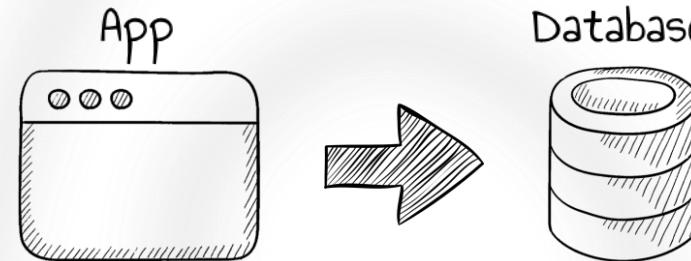


Stream Analytics
HDInsight Kafka
Event Hubs
IoT Hub
Cosmos DB ✓

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

Application Workloads

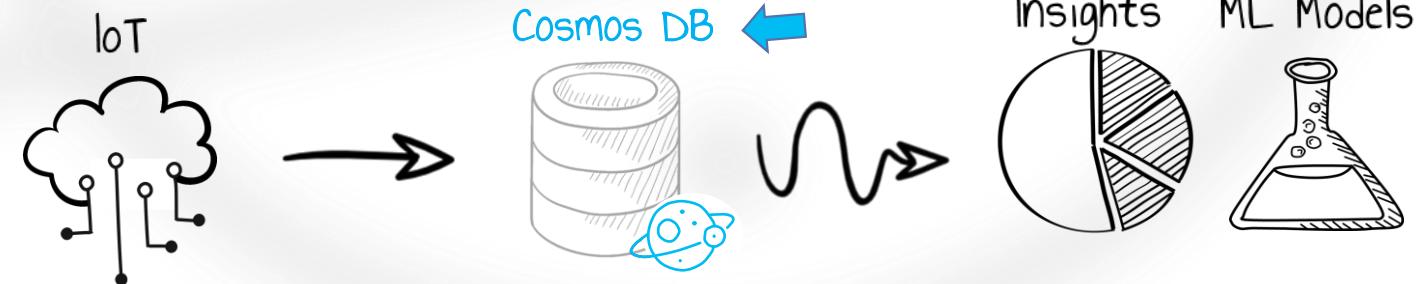
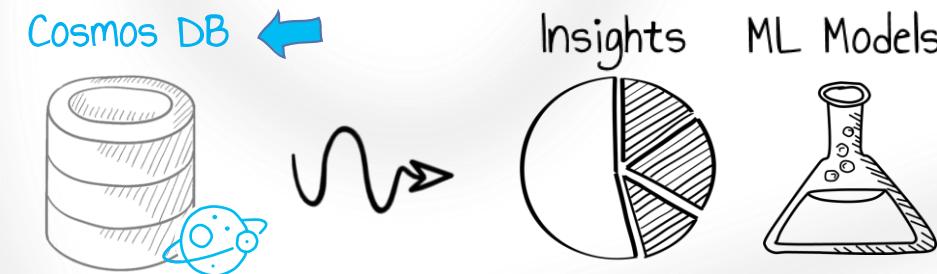
- Operational
- Analytical
- Streaming



tags: workloads, web application, cosmos db, machine learning, report, visualization

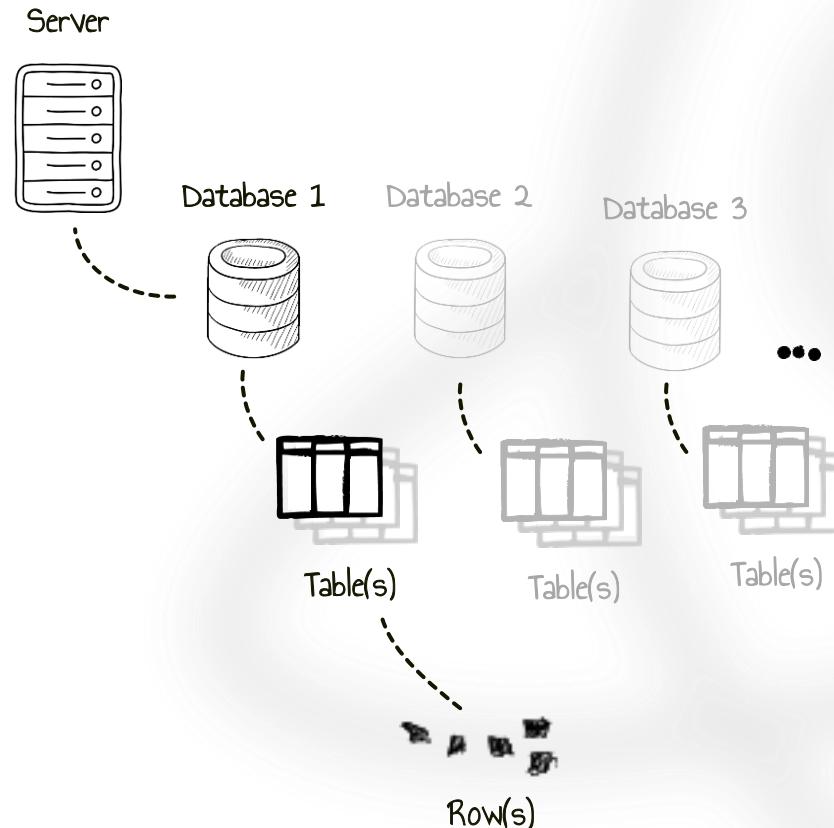
Cosmos DB Workloads

- Operational
- Analytical
- Streaming



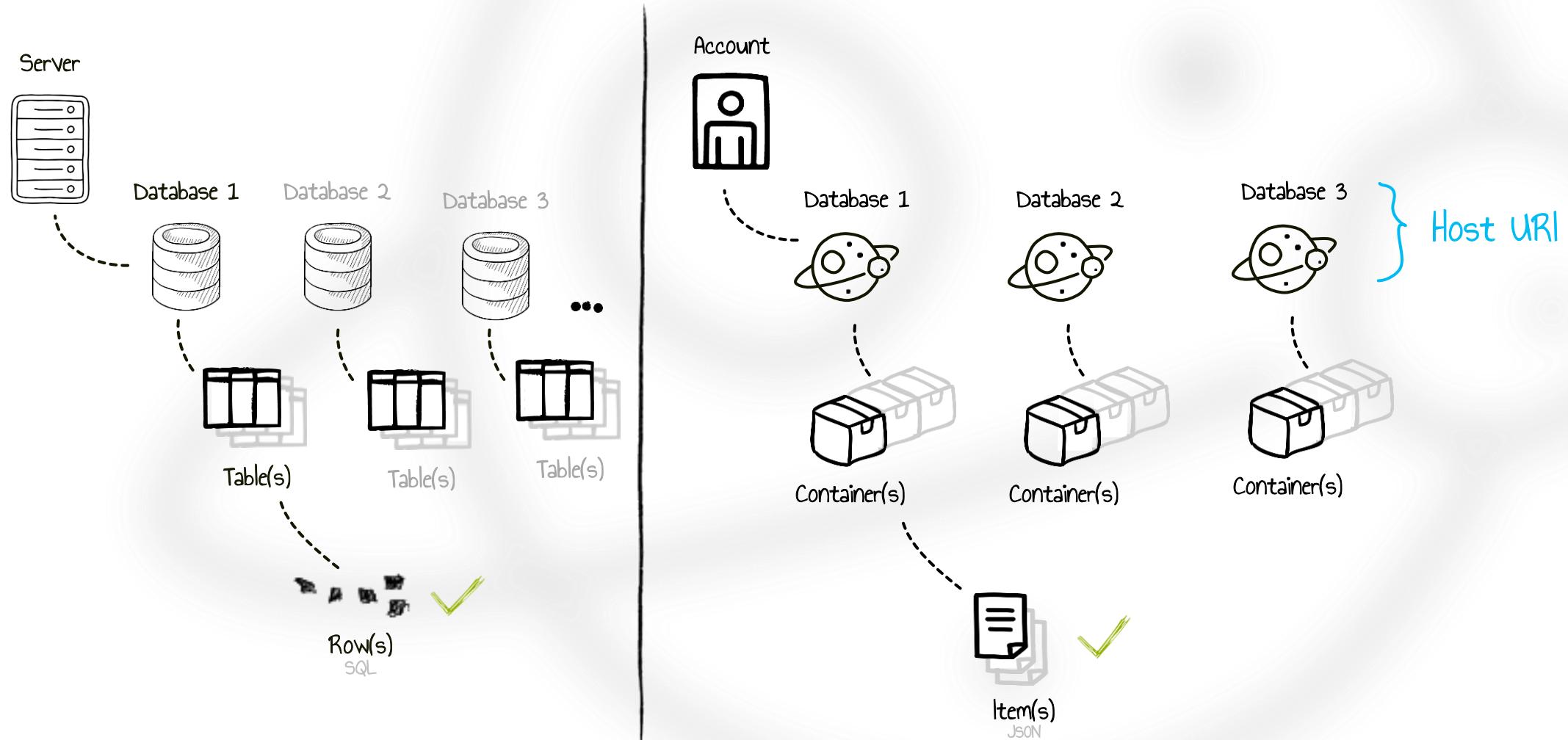
tags: workloads, web application, cosmos db, machine learning, report, visualization

Typcial Database Architecture

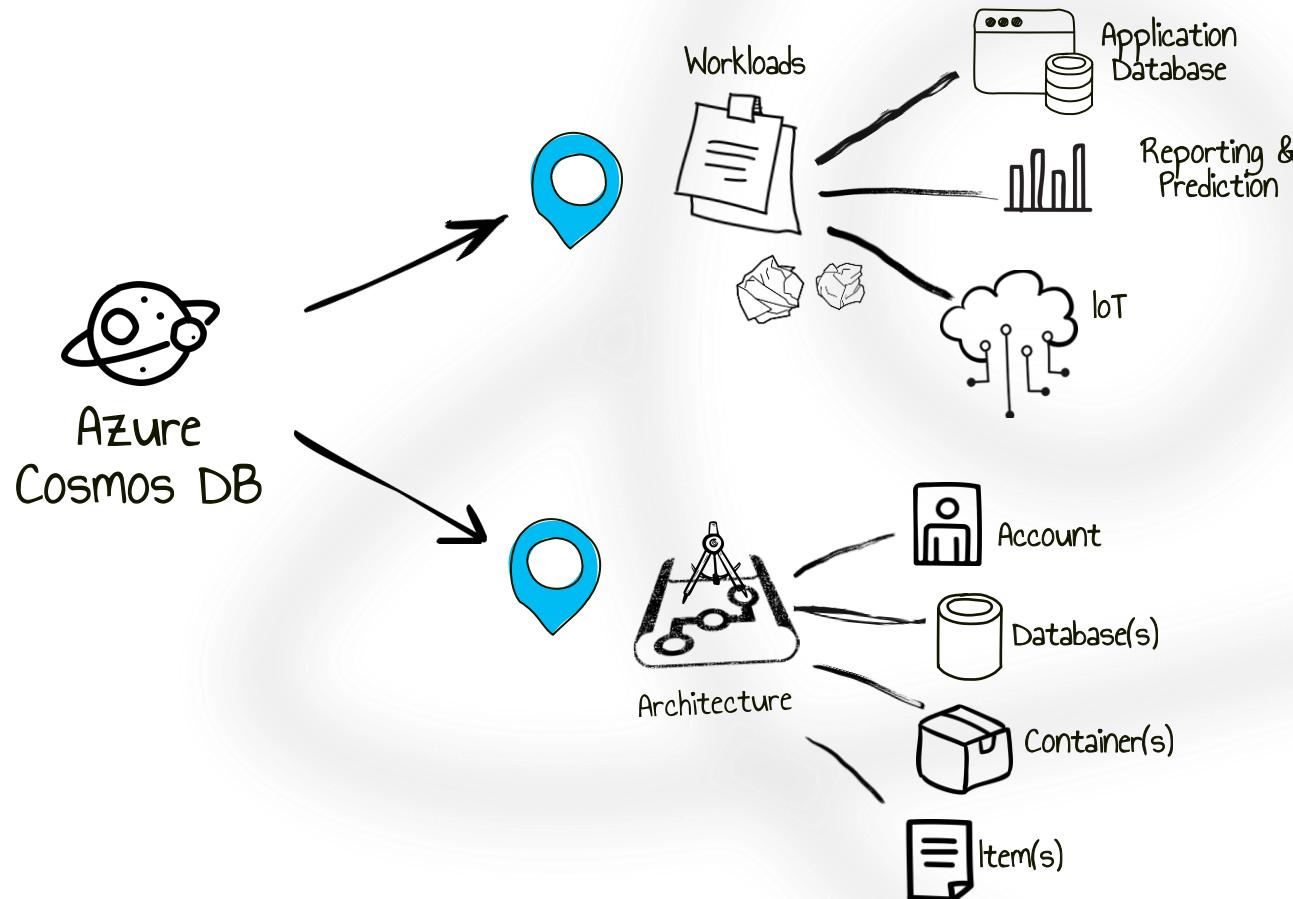


tags: workloads, web application, cosmos db, machine learning, report, visualization

Cosmos DB Architecture



Section Recap



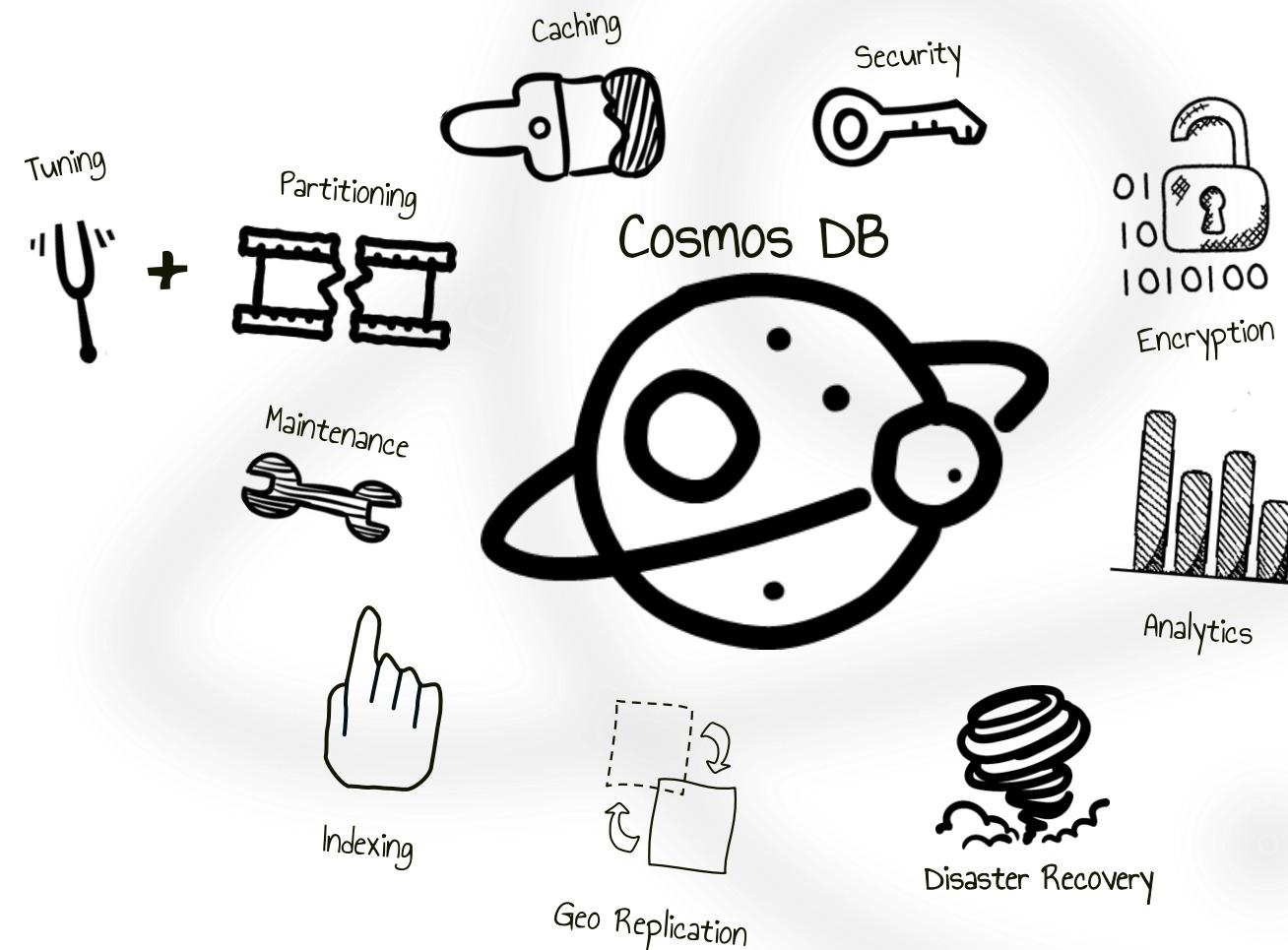
Capabilities

Individual database capabilities required by application developers



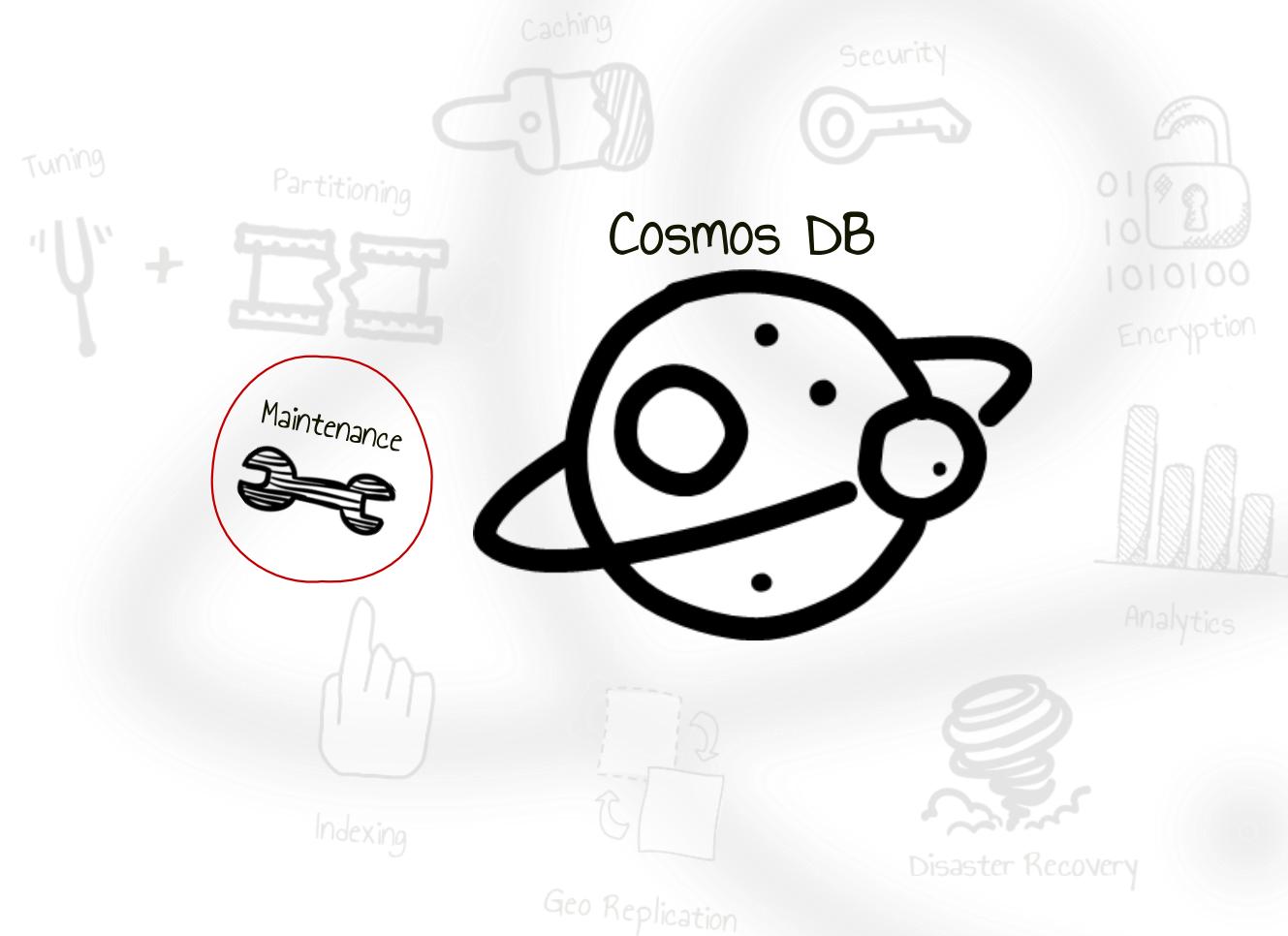
tags: azure, cosmos db, capability

Notable Capabilities



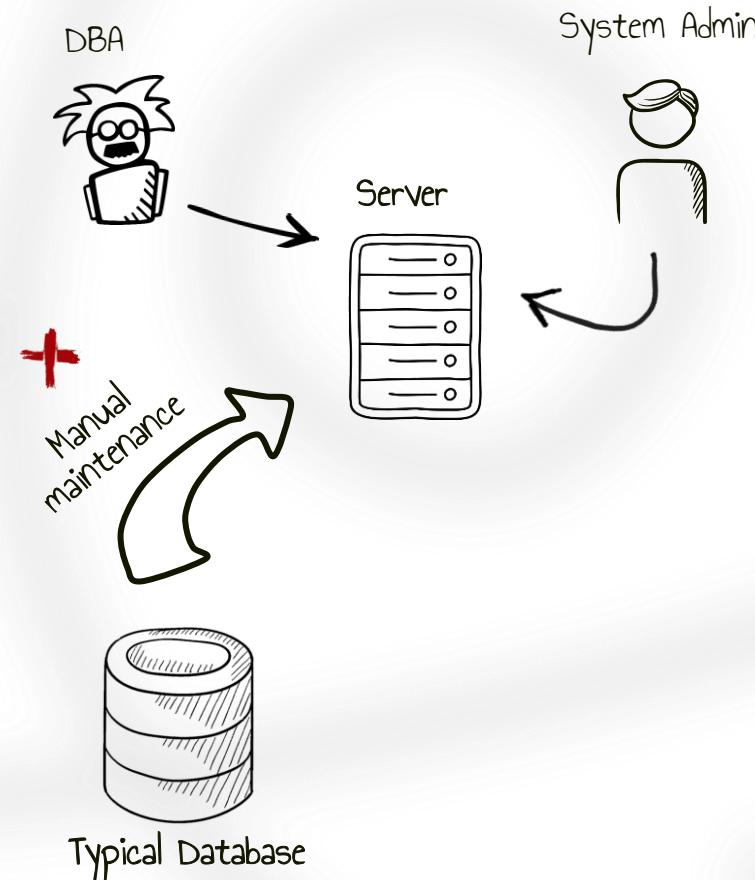
tags: azure, cosmos db, capability, database, application

Azure Cosmos DB



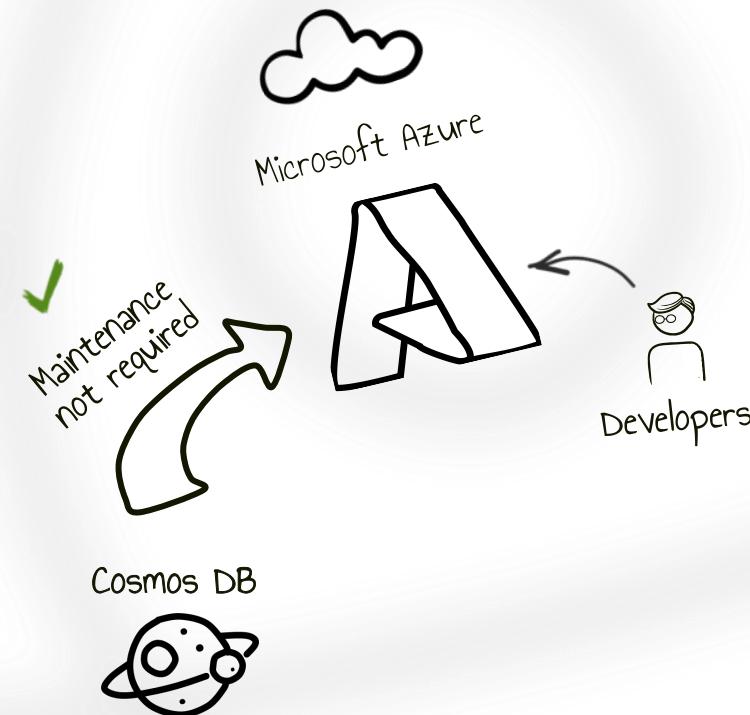
tags: azure, cosmos db, install, maintain

Maintenance



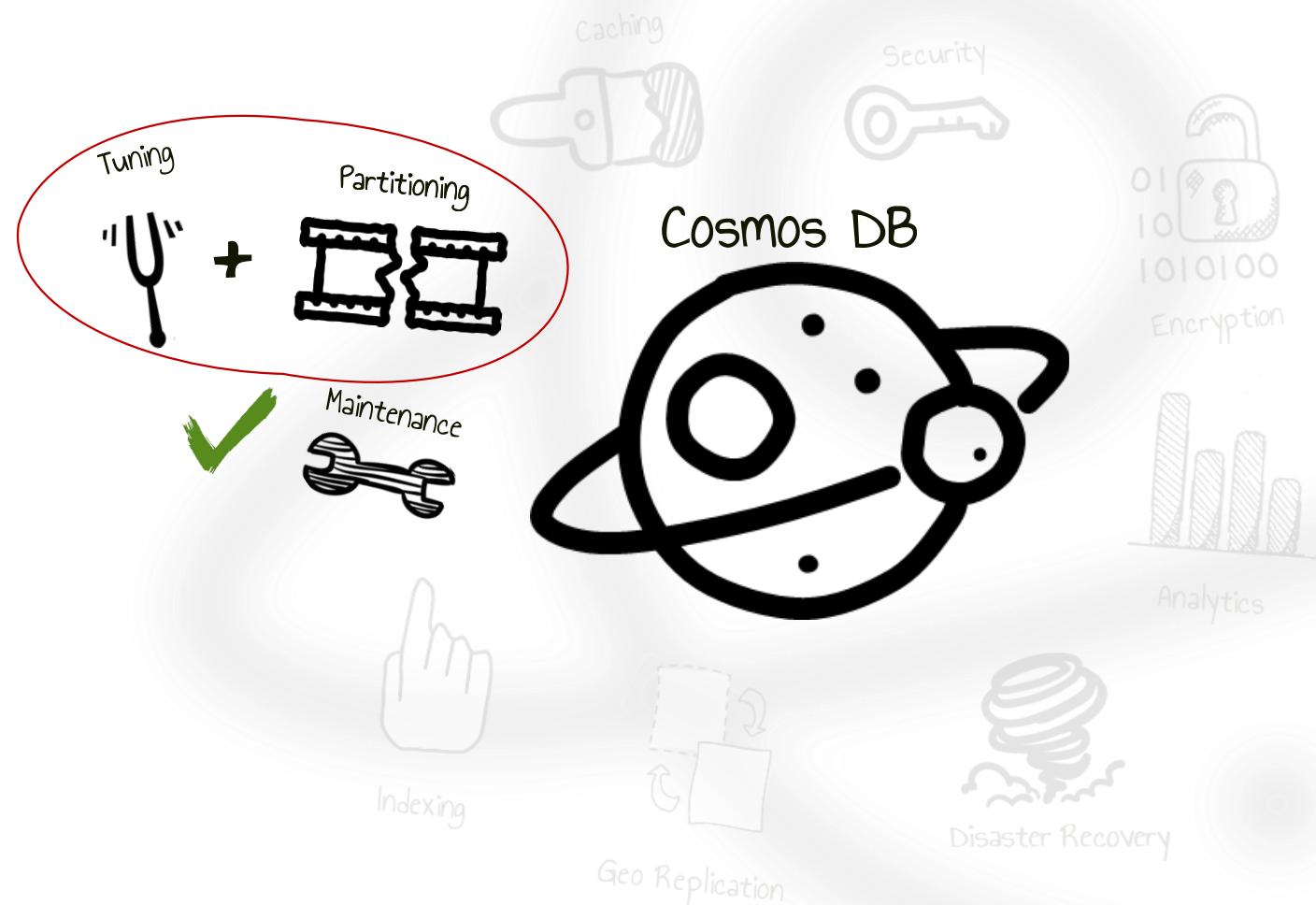
tags: azure, cosmos db, install, maintain

Maintenance



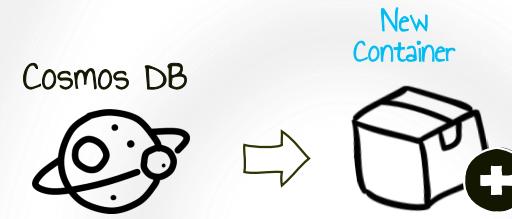
tags: azure, cosmos db, capability, database, application

Azure Cosmos DB



tags: azure, cosmos db, partition, provision

Tuning + Partitioning



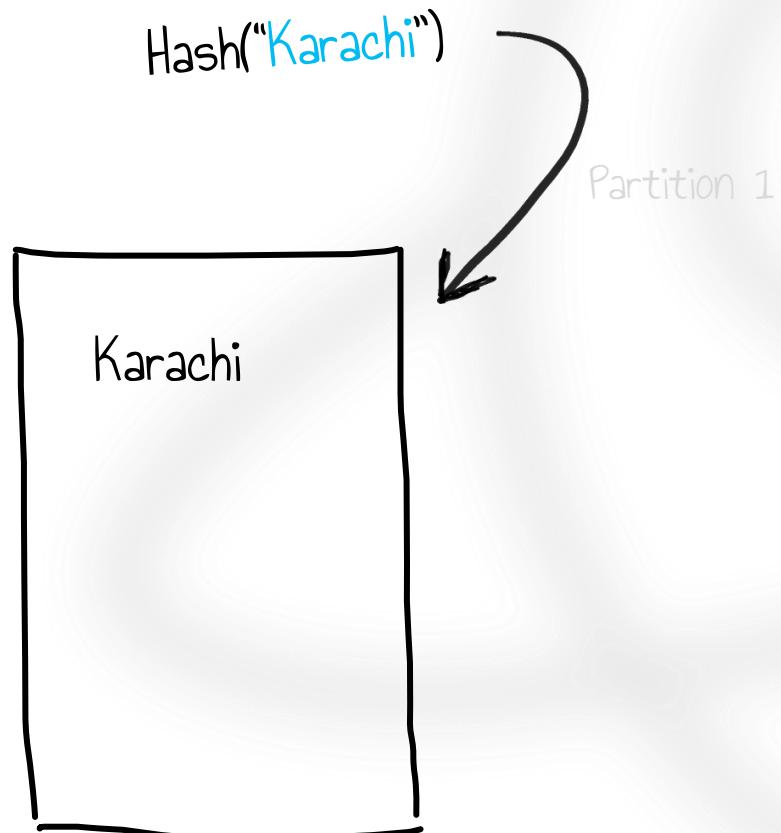
Partition Key → City

Hash(City)

Used to determine partition

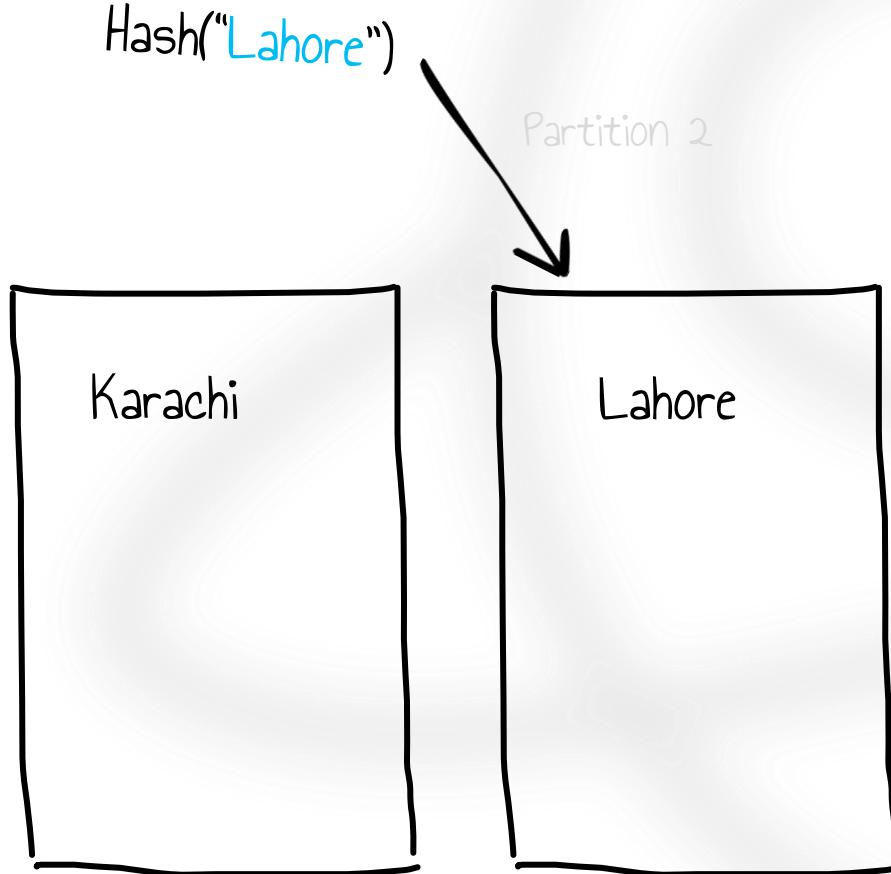
tags: azure, cosmos db, partition, provision

Tuning + Partitioning



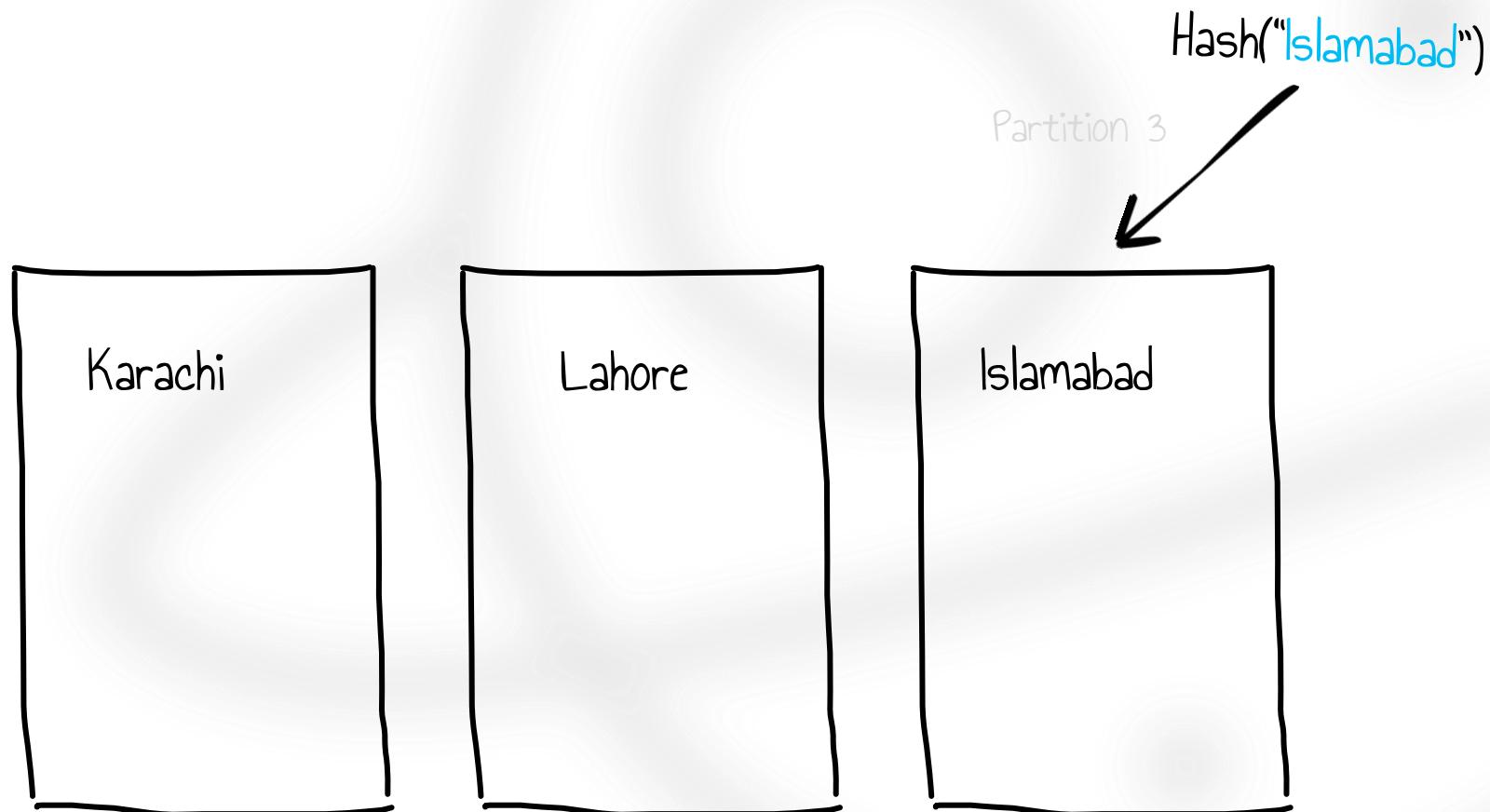
tags: azure, cosmos db, partition, provision

Tuning + Partitioning



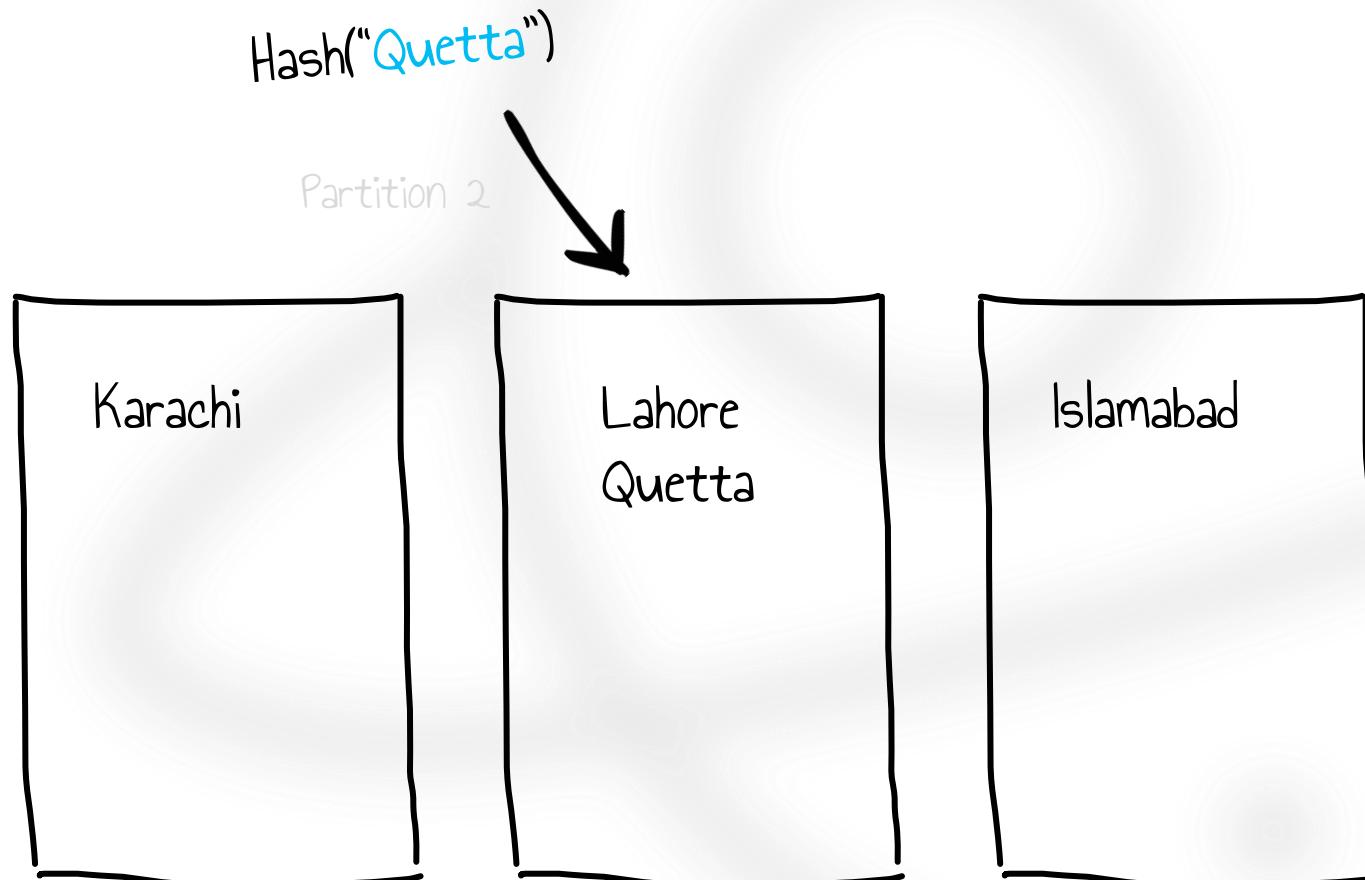
tags: azure, cosmos db, partition, provision

Tuning + Partitioning



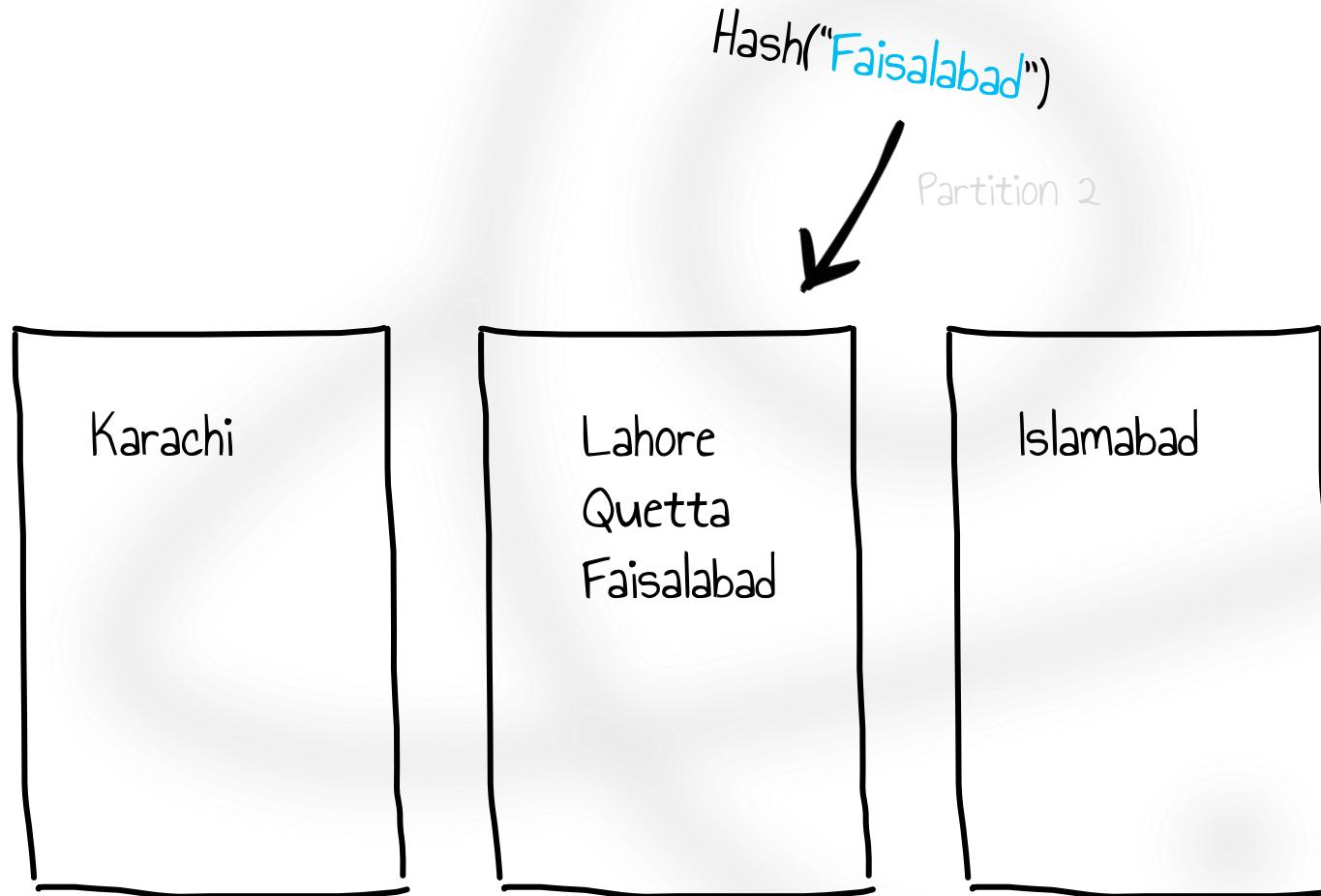
tags: azure, cosmos db, partition, provision

Tuning + Partitioning



tags: azure, cosmos db, partition, provision

Tuning + Partitioning

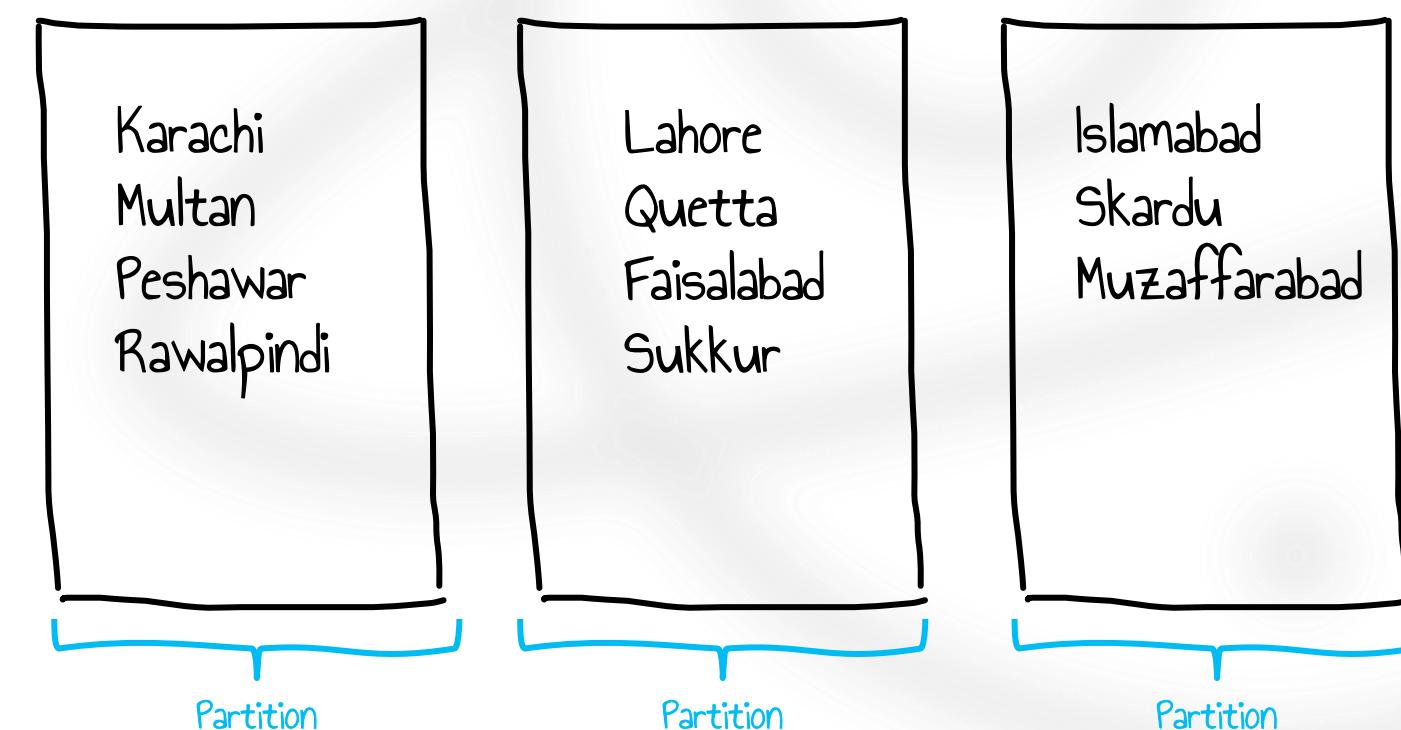


Tuning + Partitioning



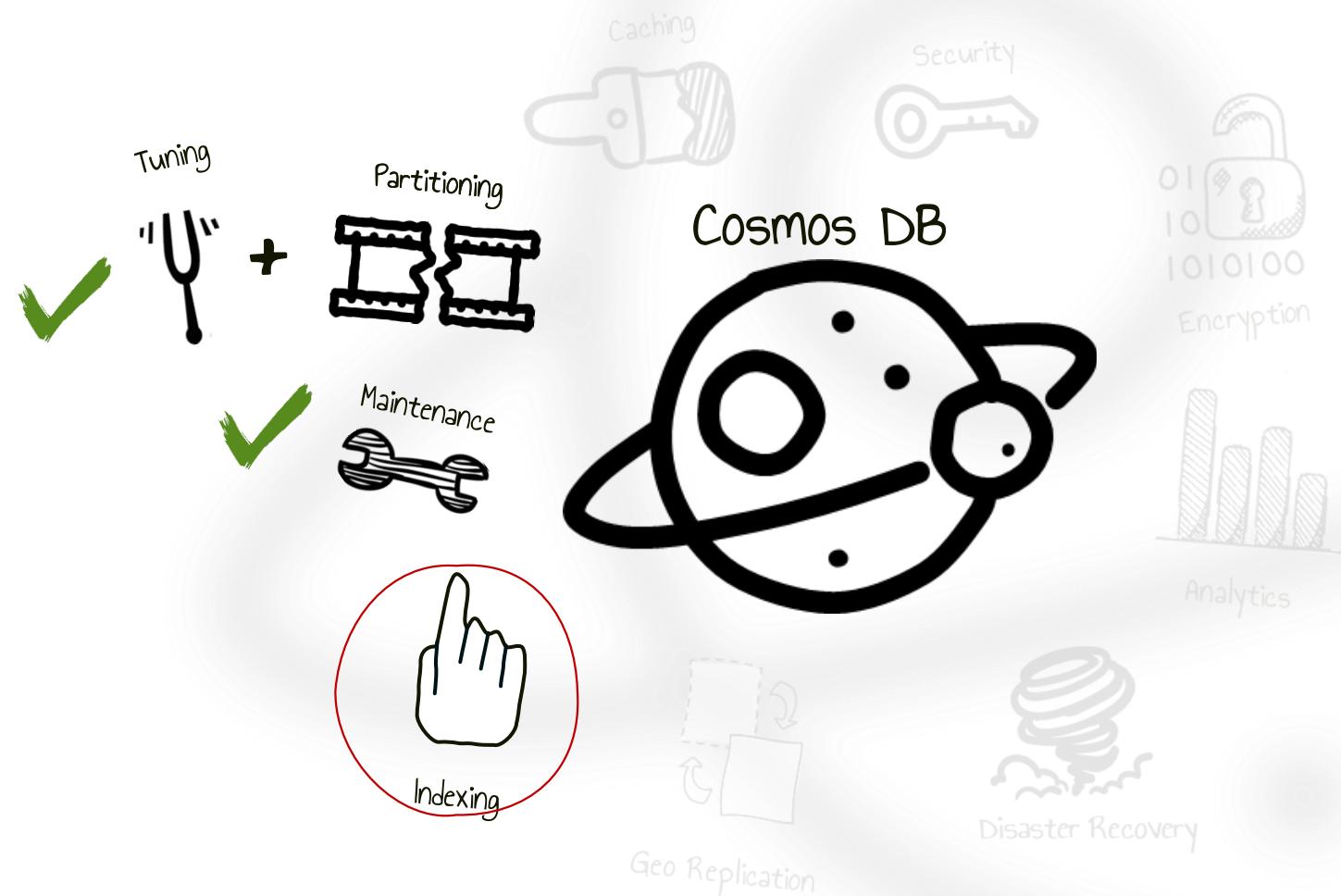
Search "Faisalabad" → Partition 2

Tuning

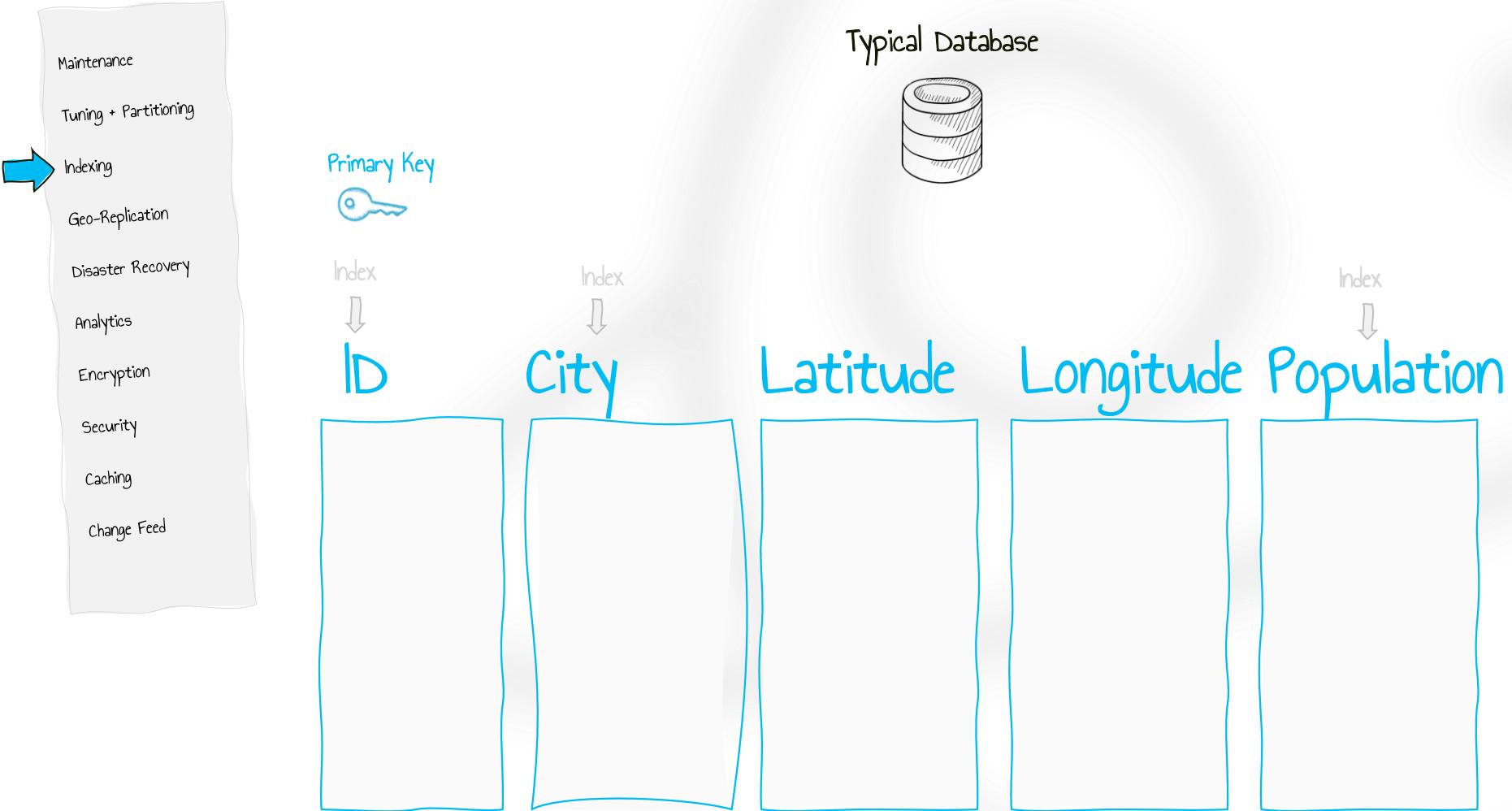


tags: azure, cosmos db, capability, database, application

Azure Cosmos DB

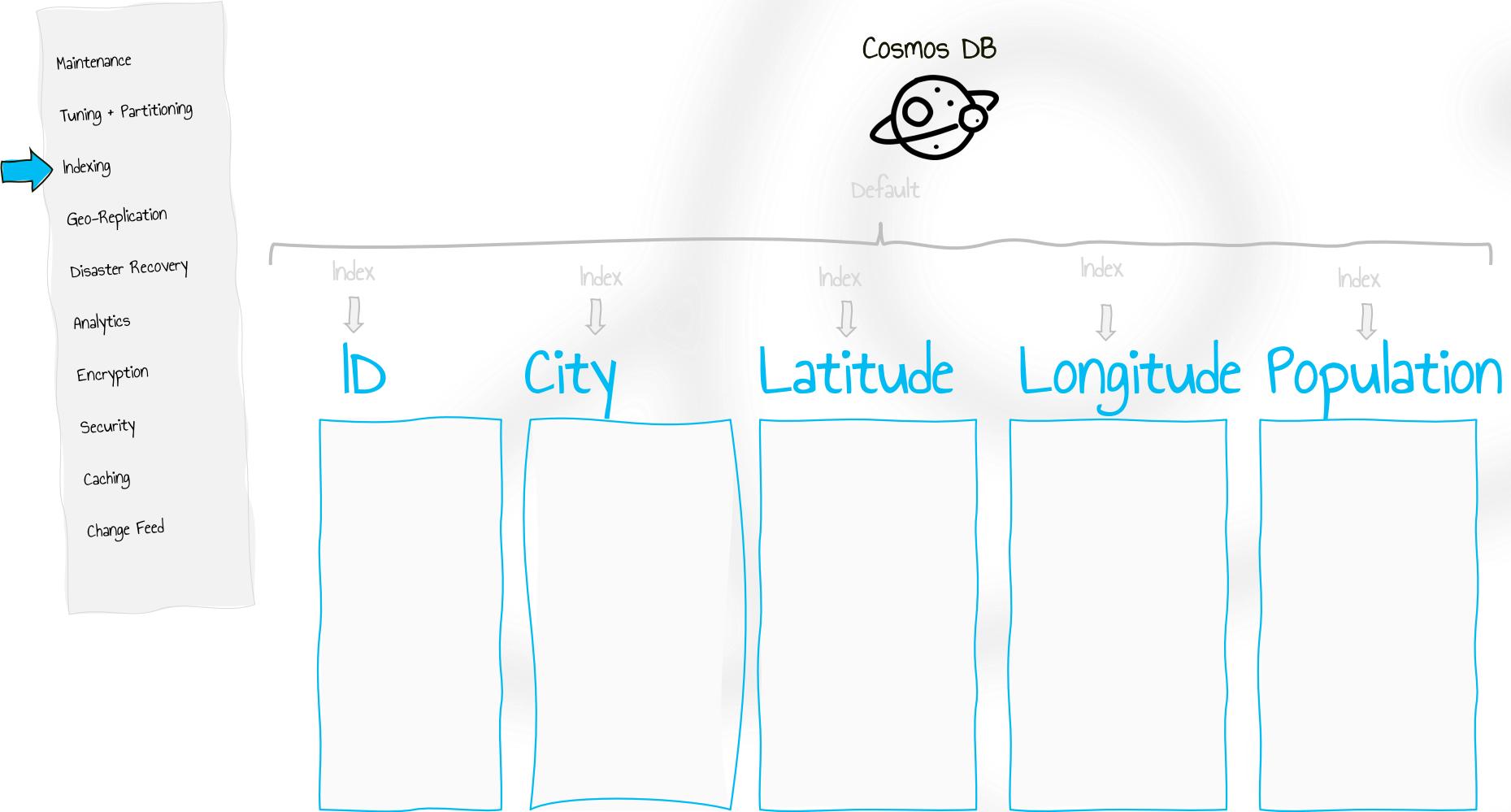


Indexing



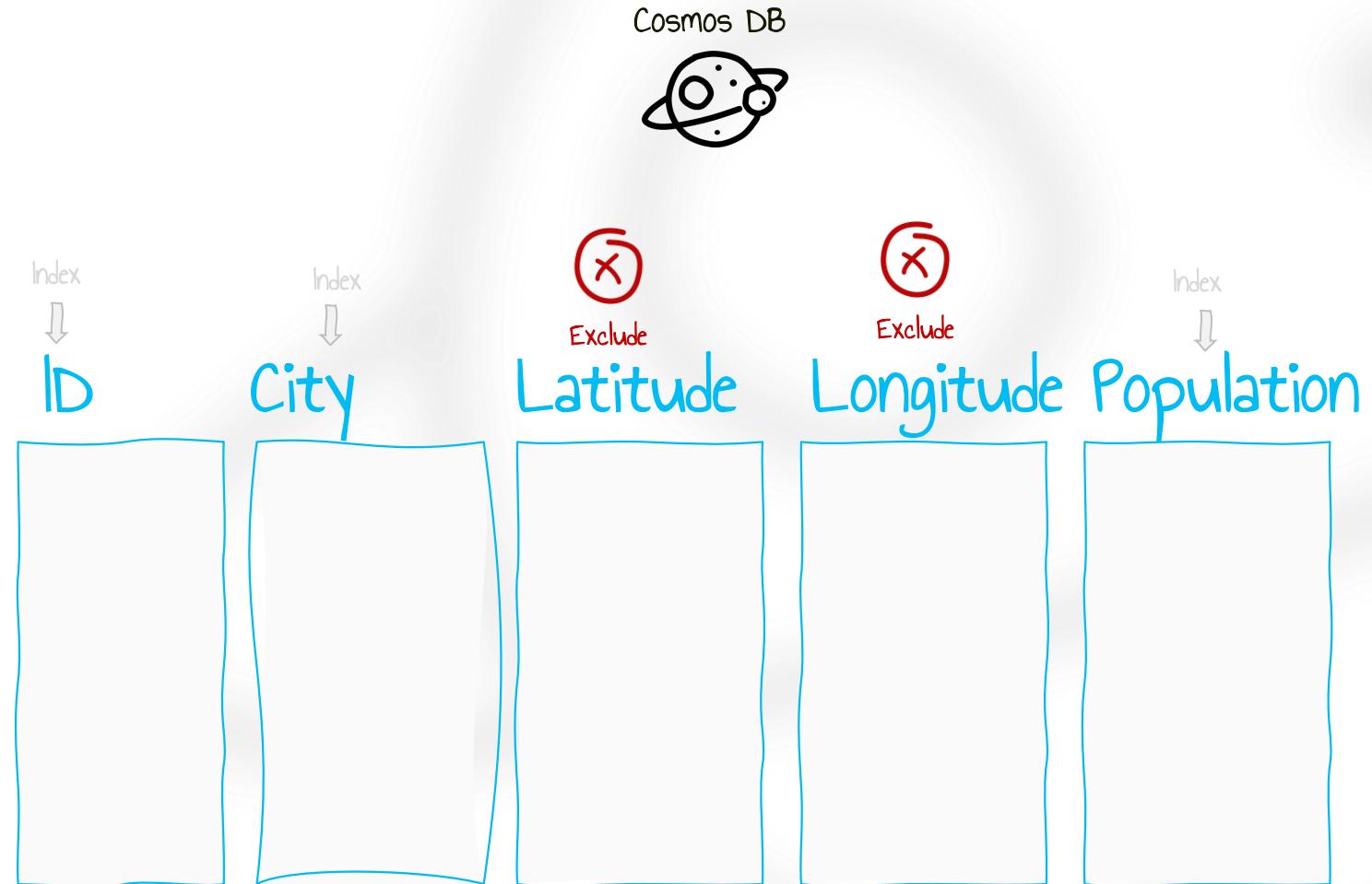
tags: azure, cosmos db, index, performance

Indexing



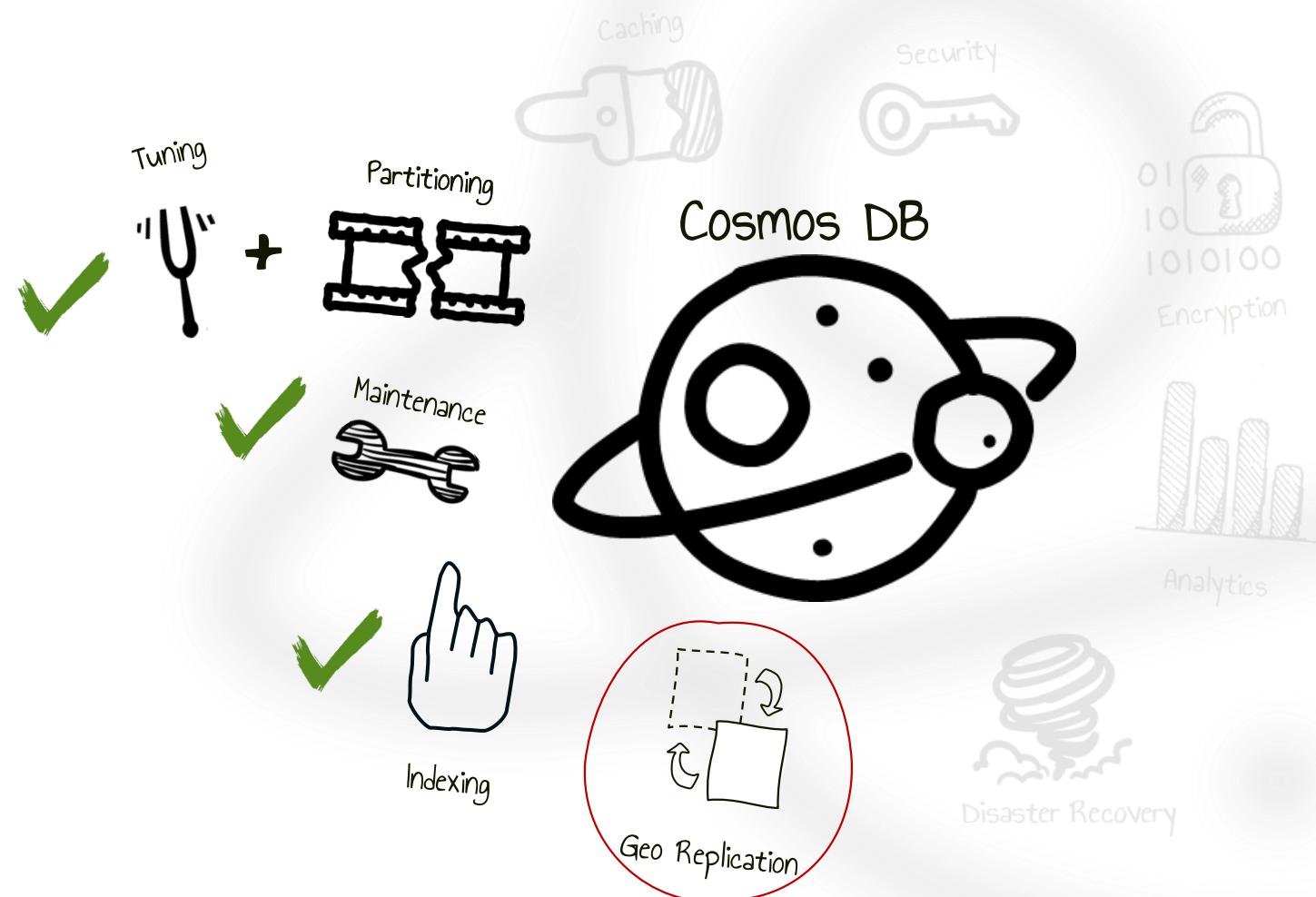
tags: azure, cosmos db, index, performance

Indexing



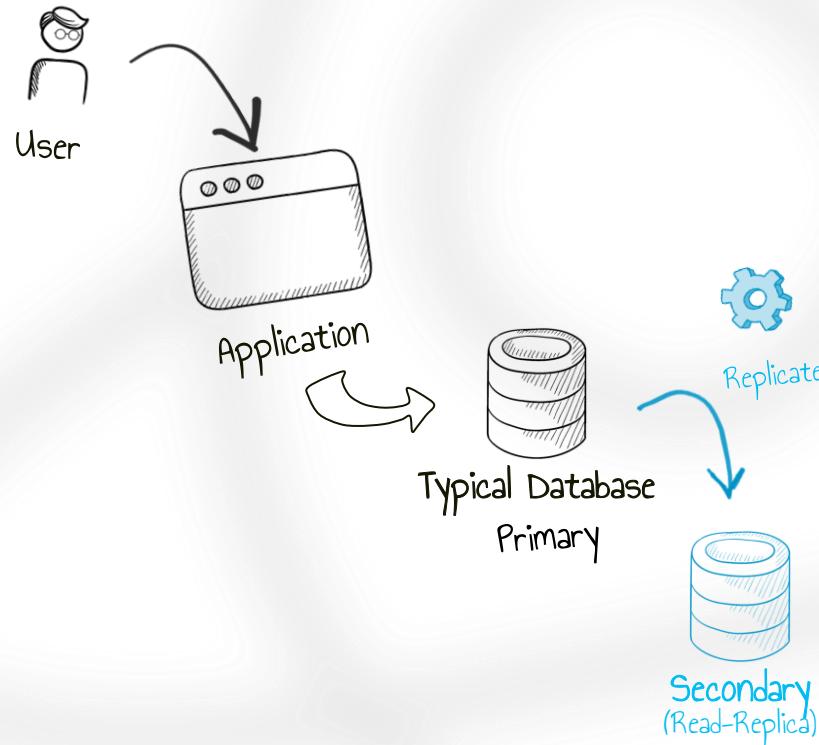
tags: azure, cosmos db, capability, database, application

Azure Cosmos DB



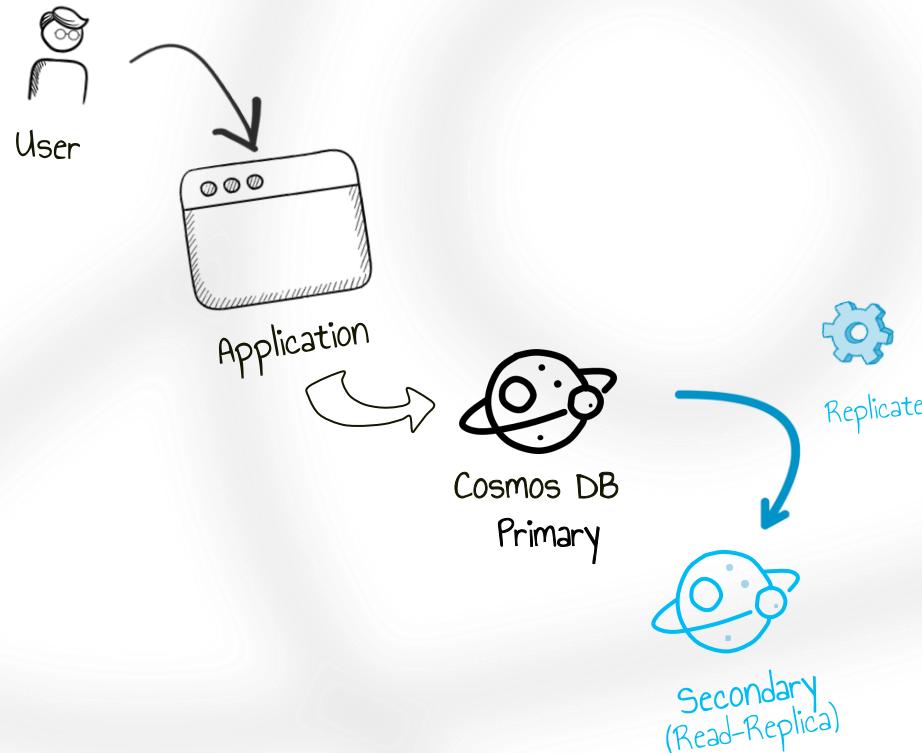
tags: azure, cosmos db, copy, geography, replicate

Geo-Replication



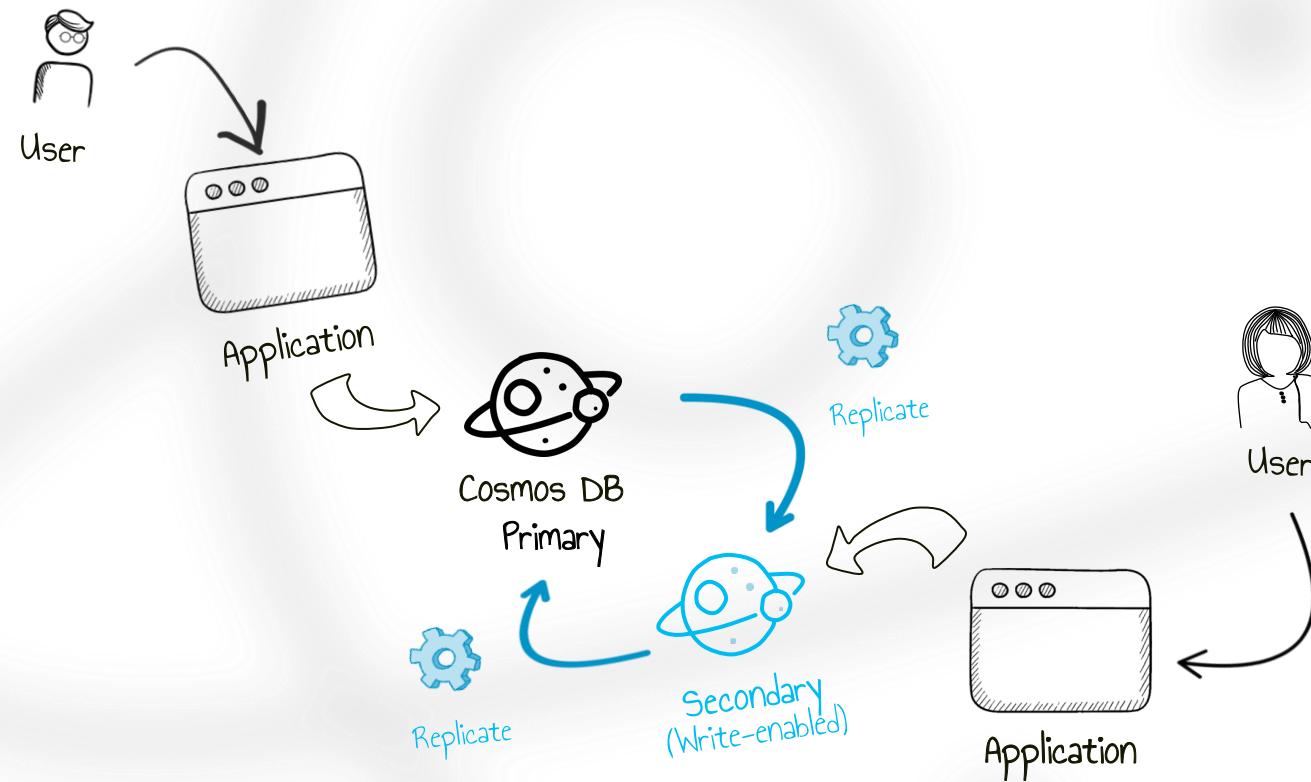
tags: azure, cosmos db, copy, geography, replicate

Geo-Replication



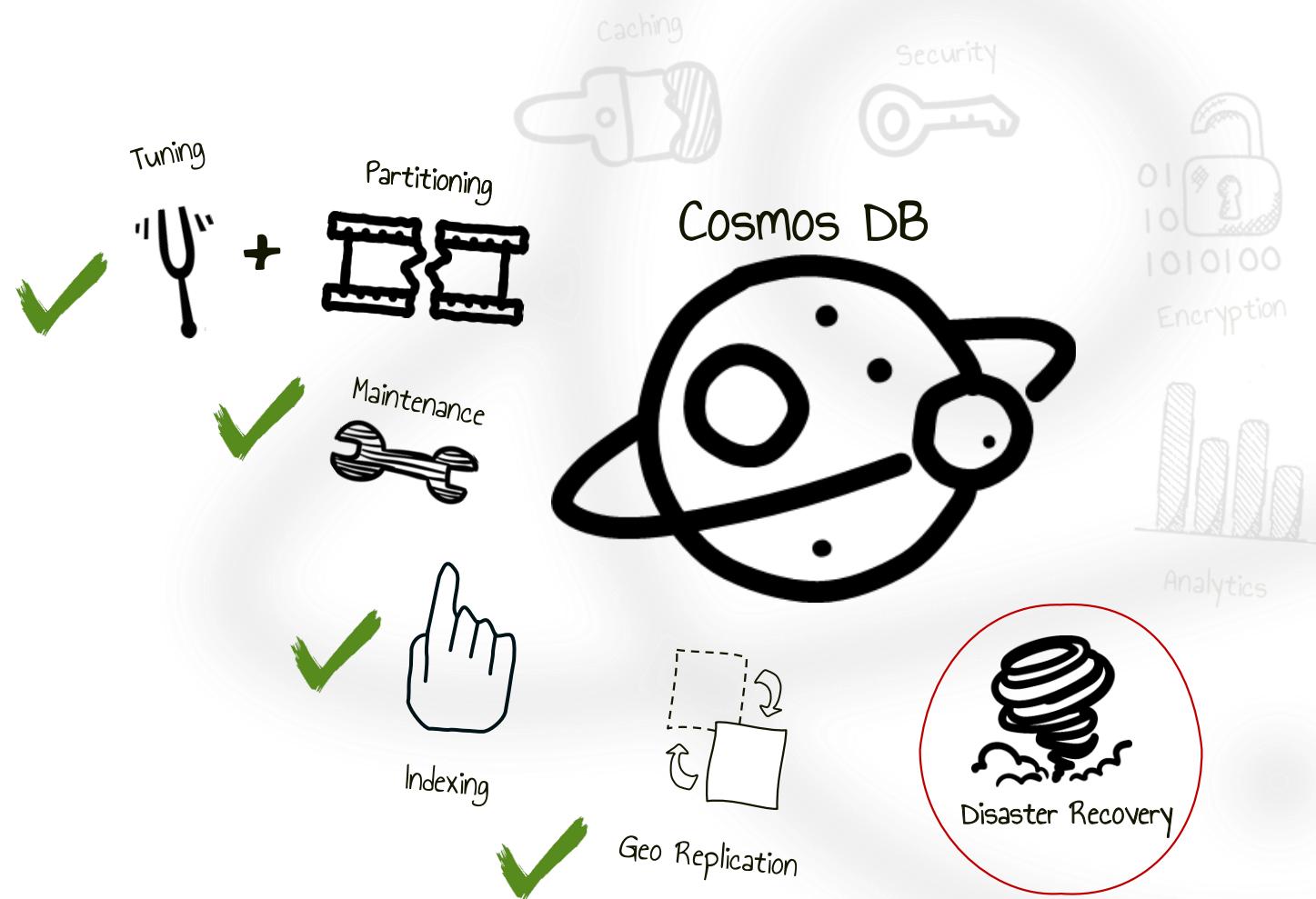
tags: azure, cosmos db, copy, geography, replicate

Geo-Replication



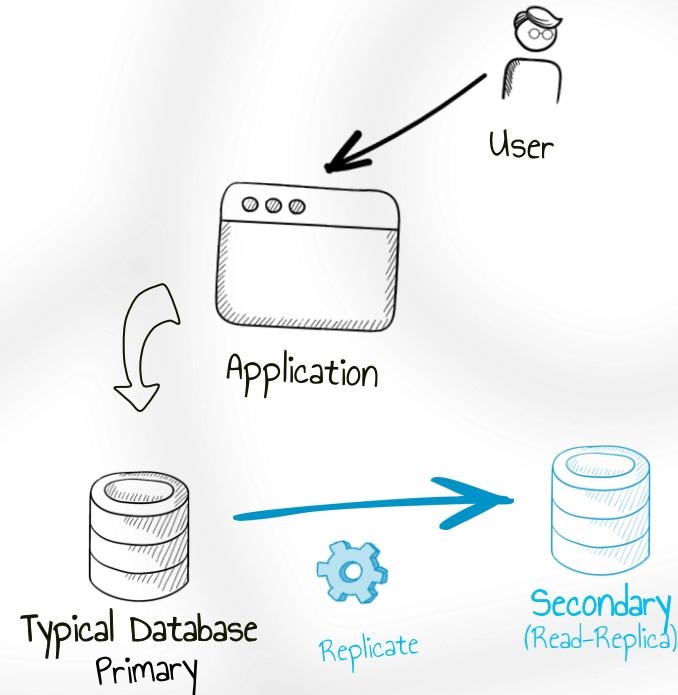
tags: azure, cosmos db, capability, database, application

Azure Cosmos DB



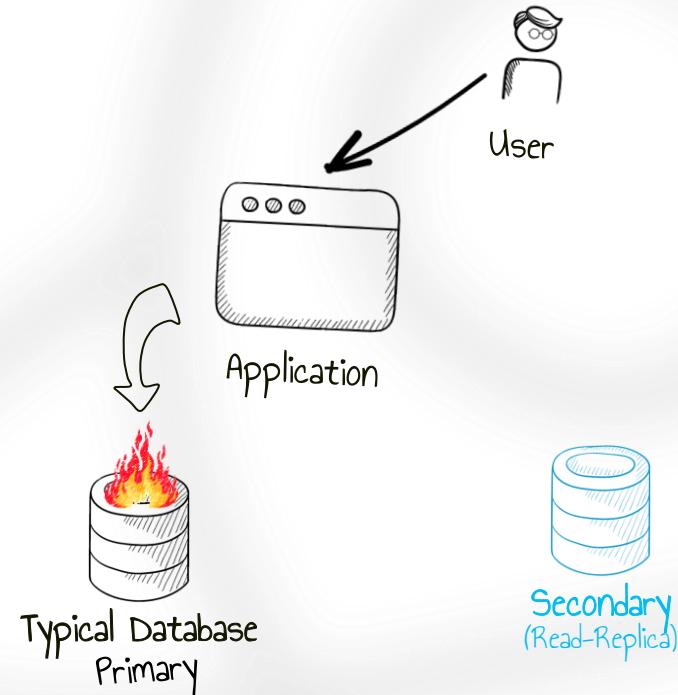
tags: azure, cosmos db, failover, recover, bcdr

Disaster Recovery



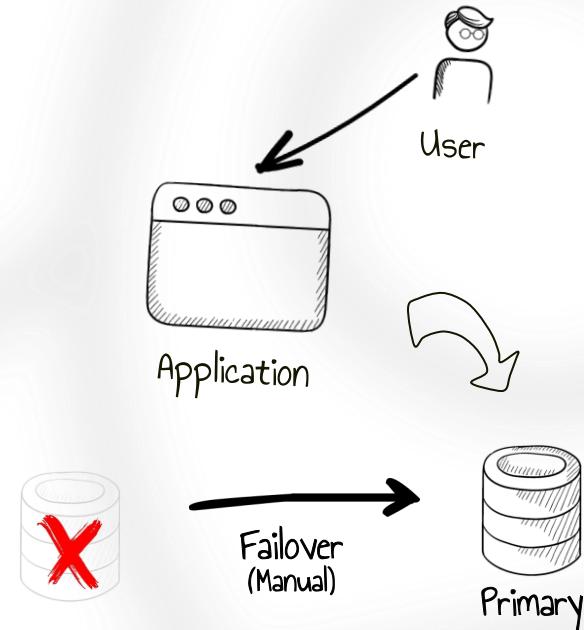
tags: azure, cosmos db, failover, recover, bcdr

Disaster Recovery



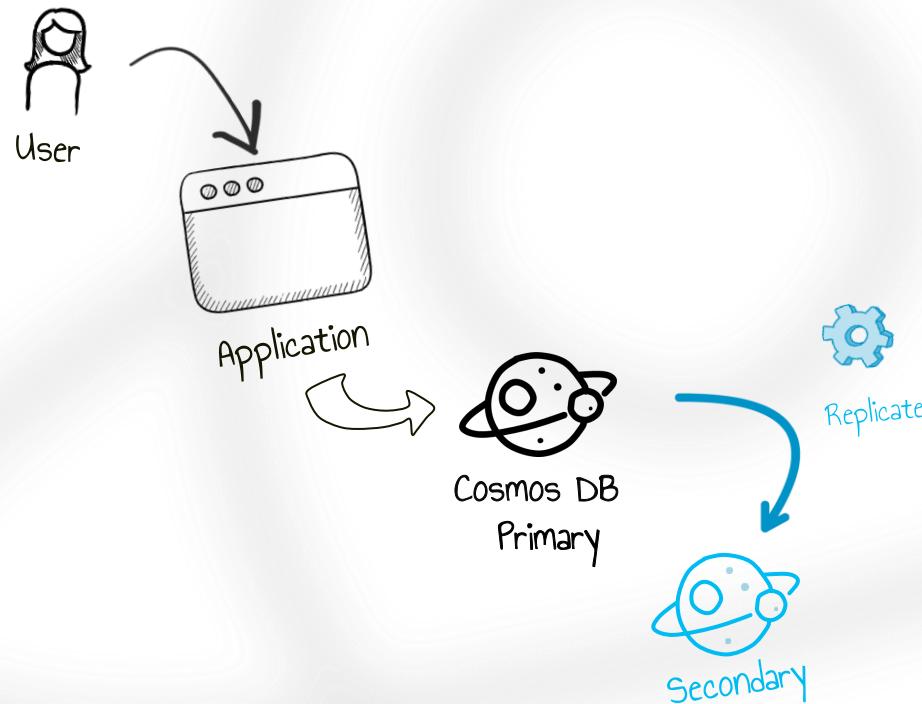
tags: azure, cosmos db, failover, recover, bcdr

Disaster Recovery



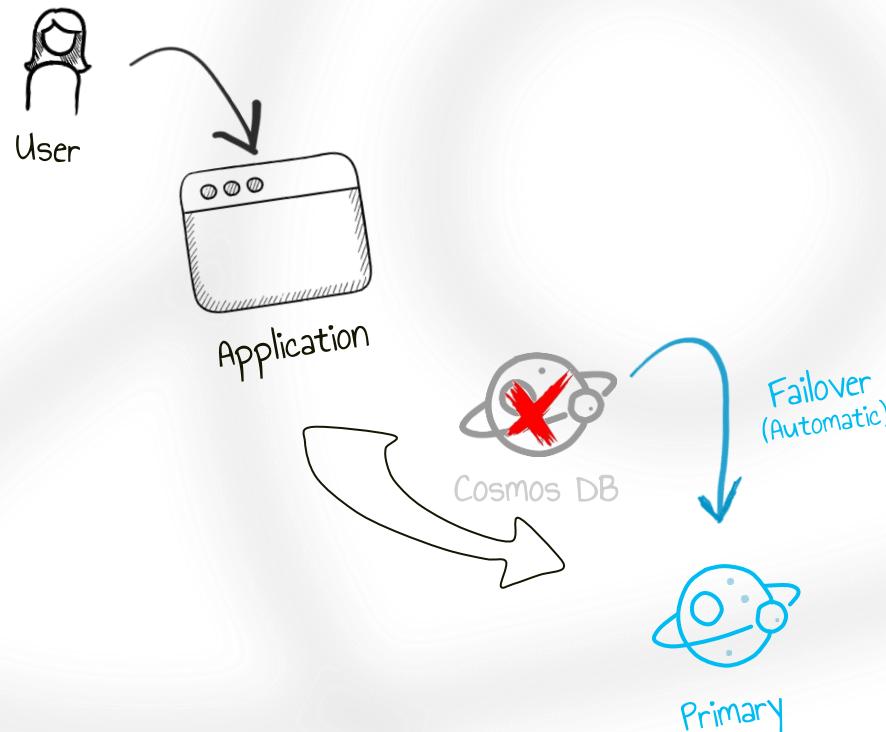
tags: azure, cosmos db, failover, recover, bcdr

Disaster Recovery



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

Disaster Recovery



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

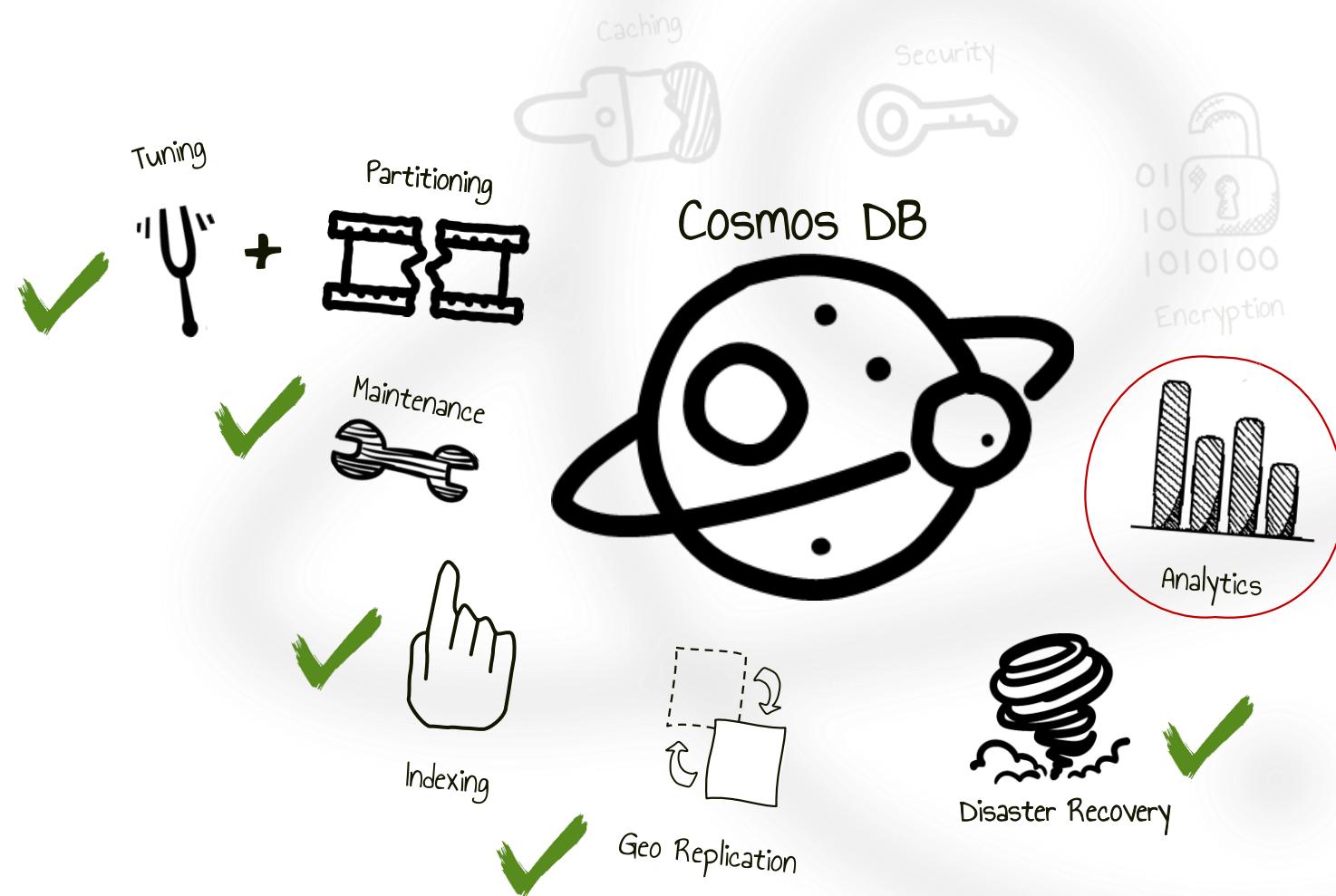
Geo-Replication + Disaster Recovery



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

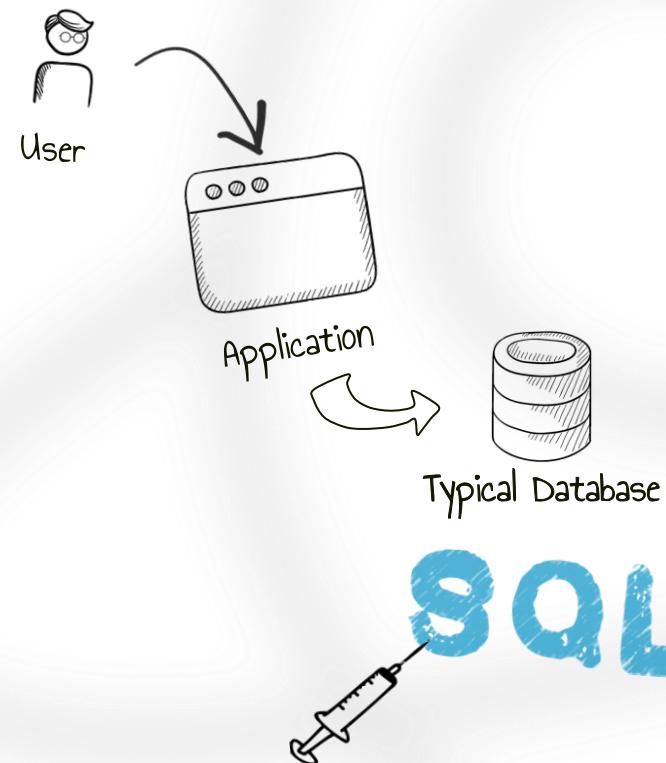
tags: azure, cosmos db, capability, database, application

Azure Cosmos DB



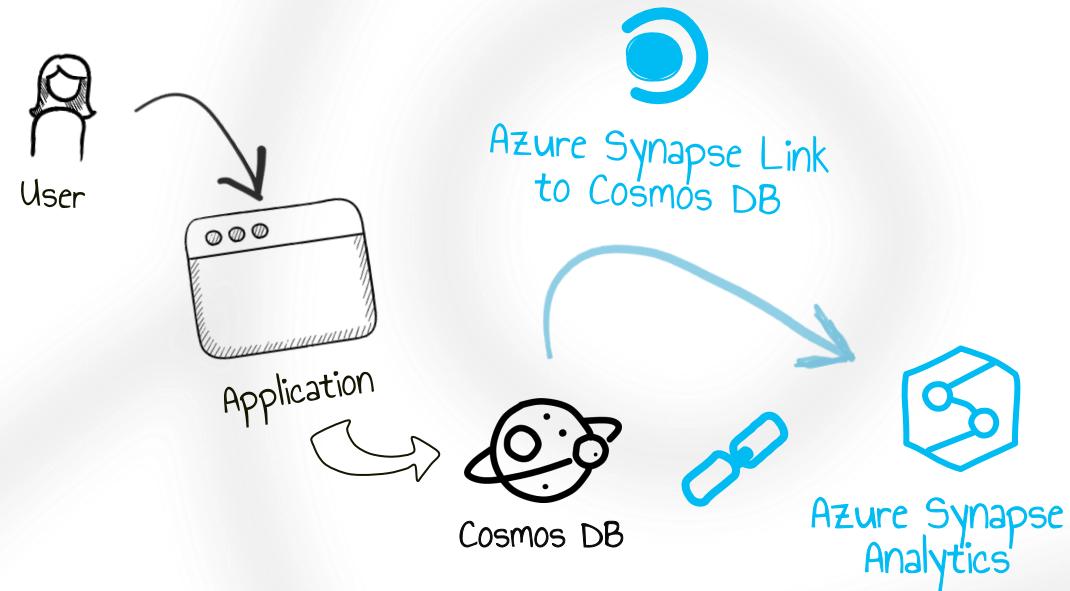
tags: azure, cosmos db, synapse, aggregation

Analytics



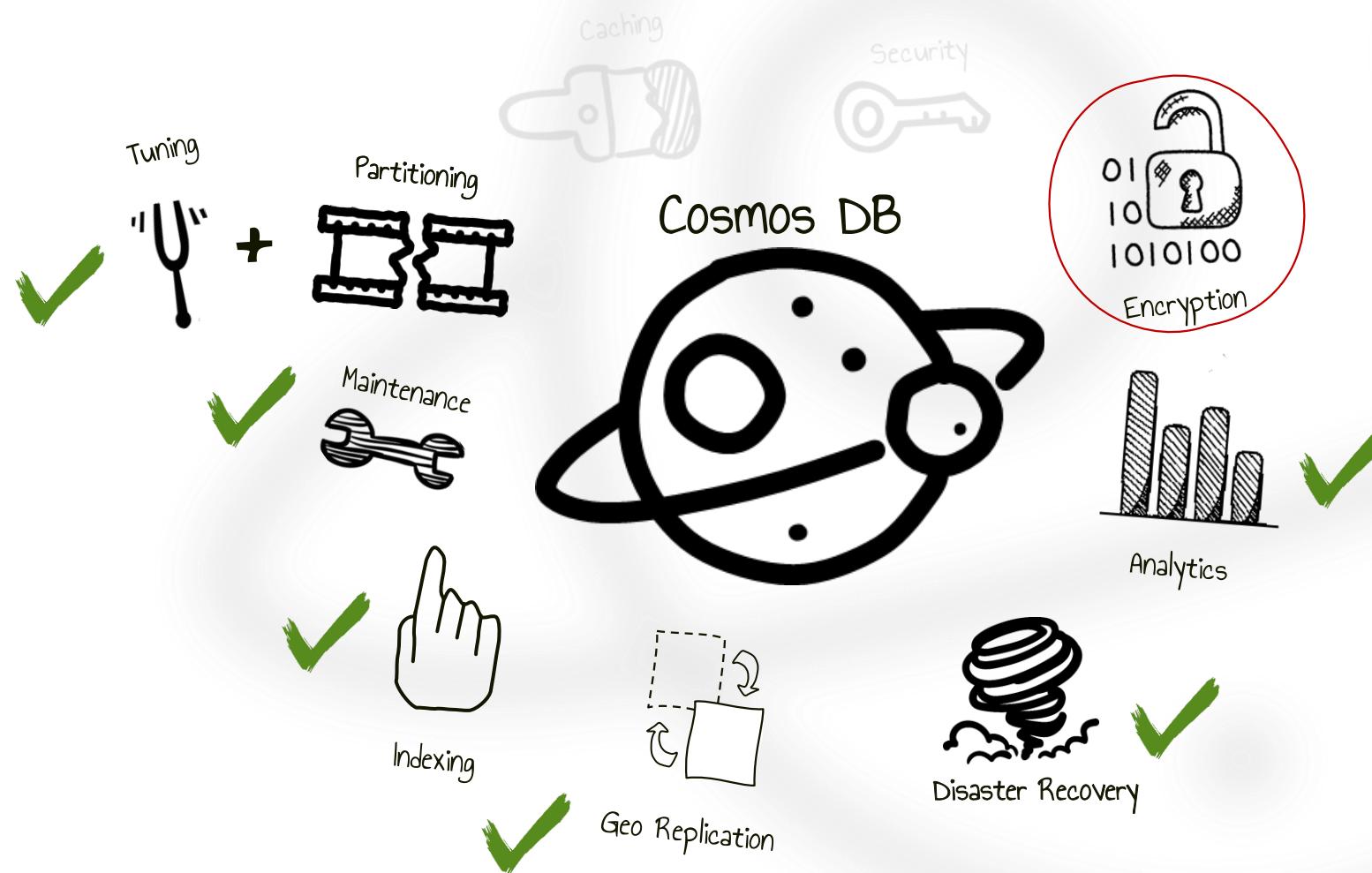
tags: azure, cosmos db, synapse, aggregation

Analytics



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

Azure Cosmos DB



tags: database, security

Encryption versus Masking

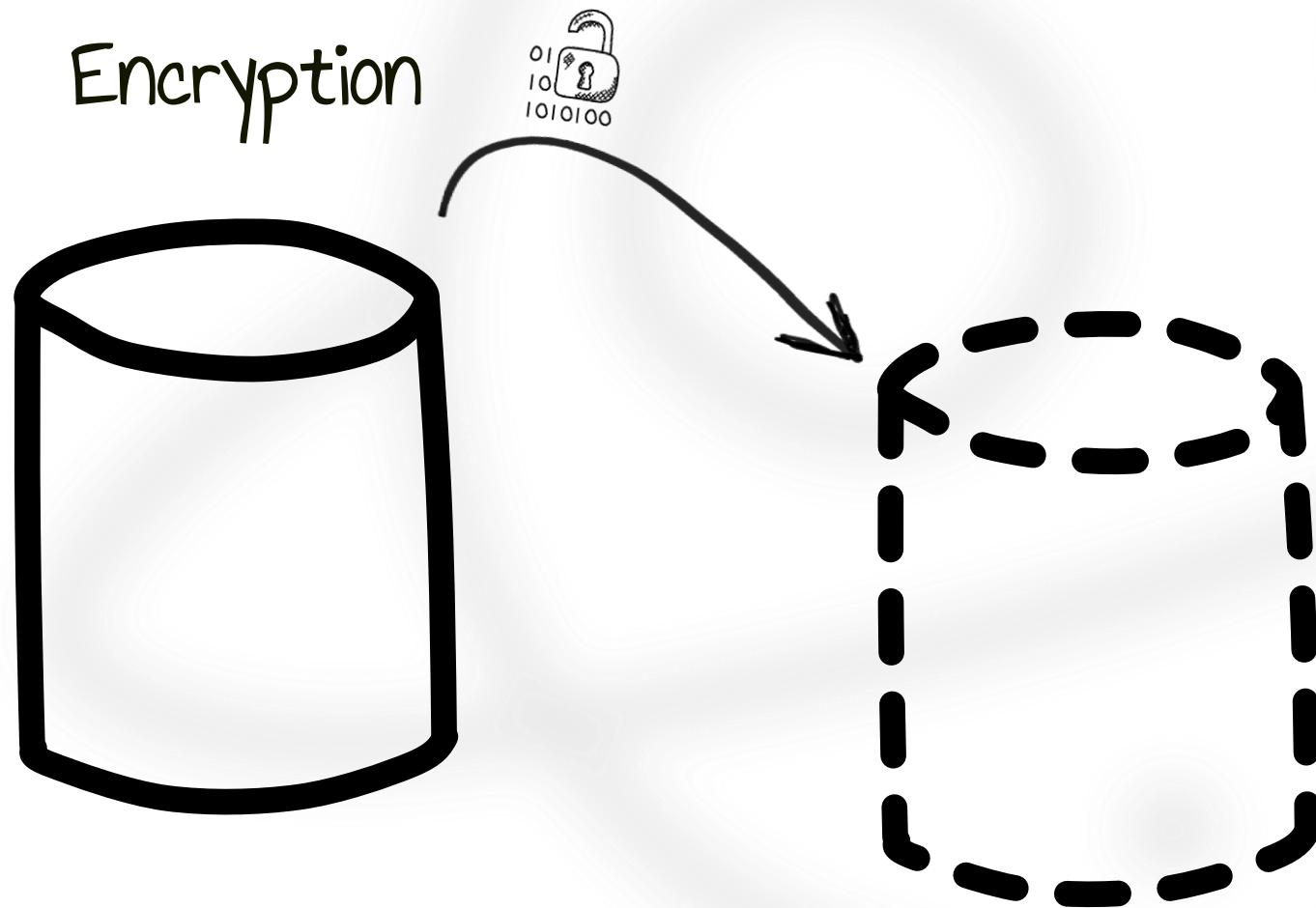
Encryption



Masking

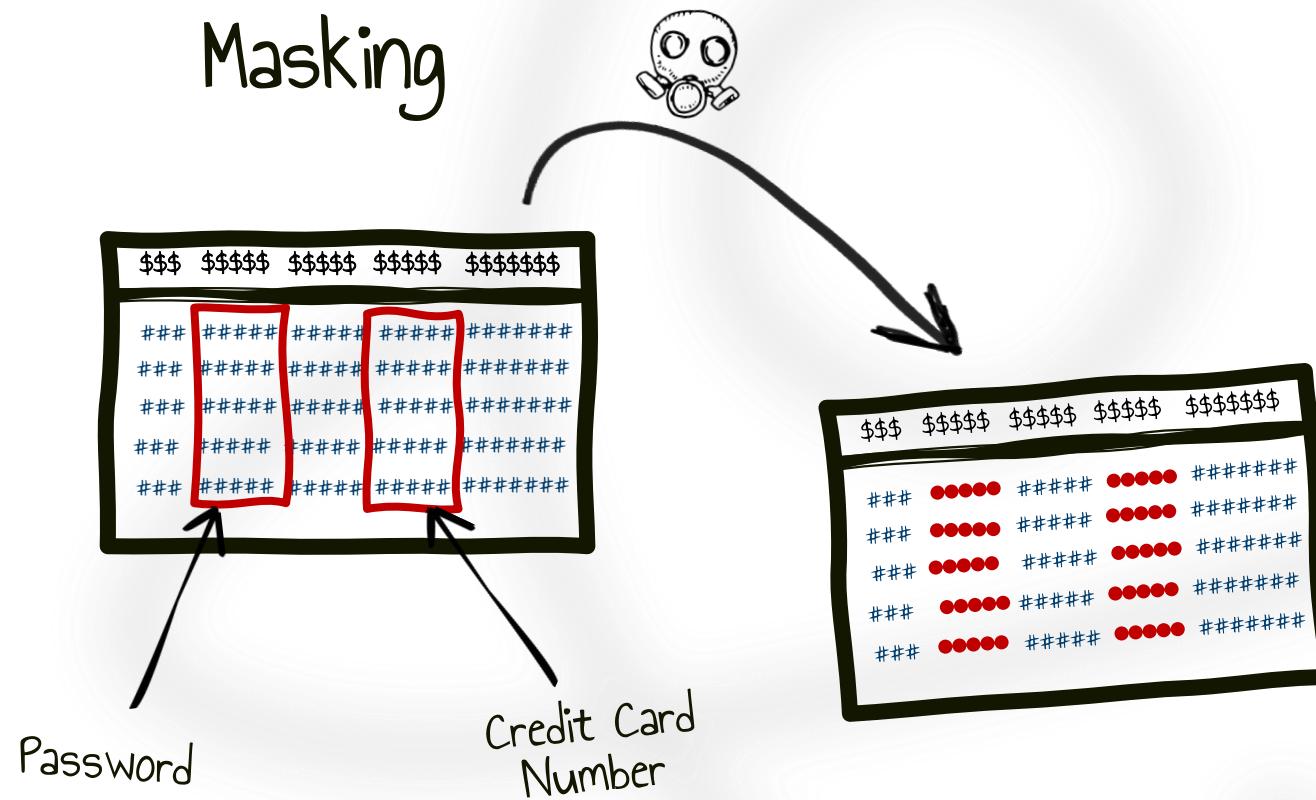
tags: database, security

Encryption versus Masking



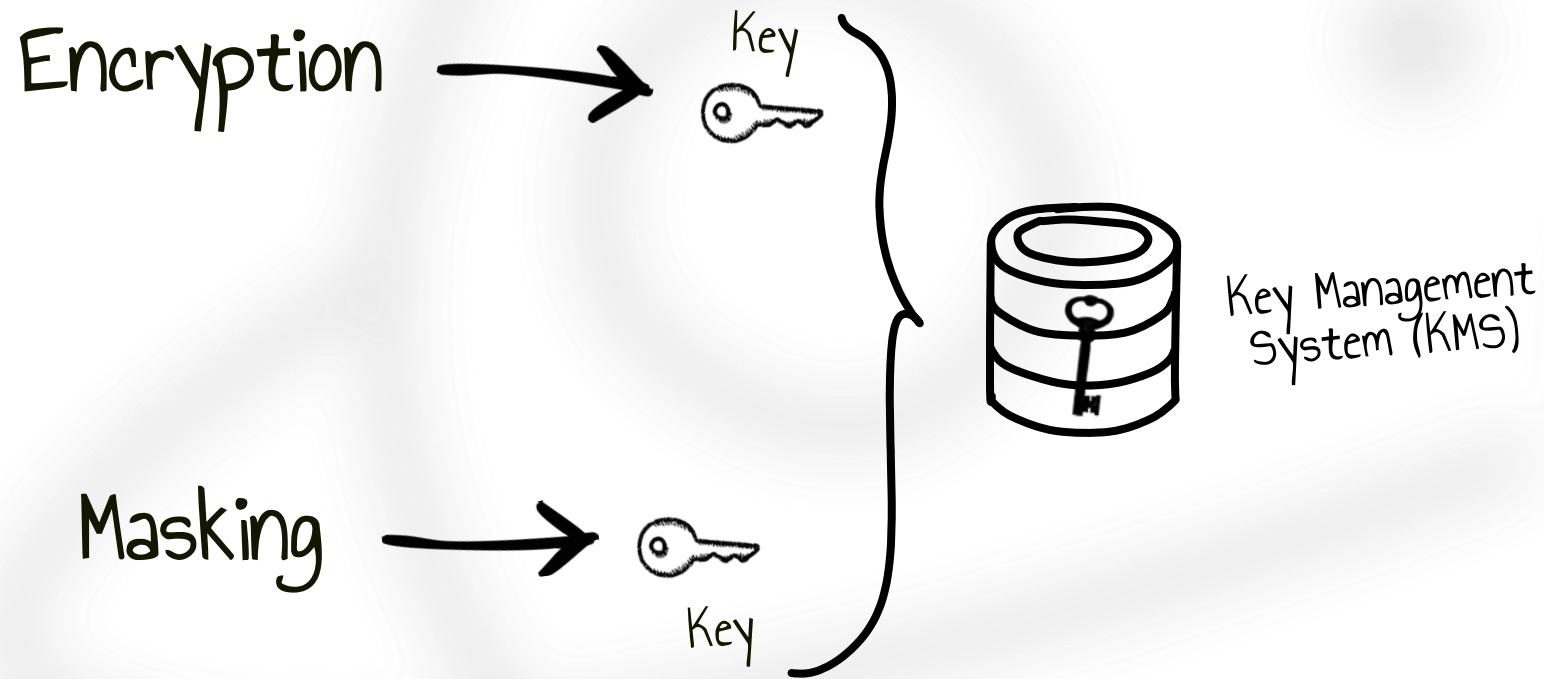
tags: database, security

Encryption versus Masking



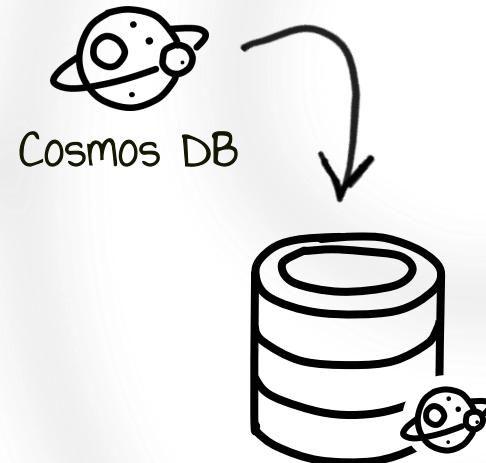
tags: database, security, key, vault

Encryption versus Masking



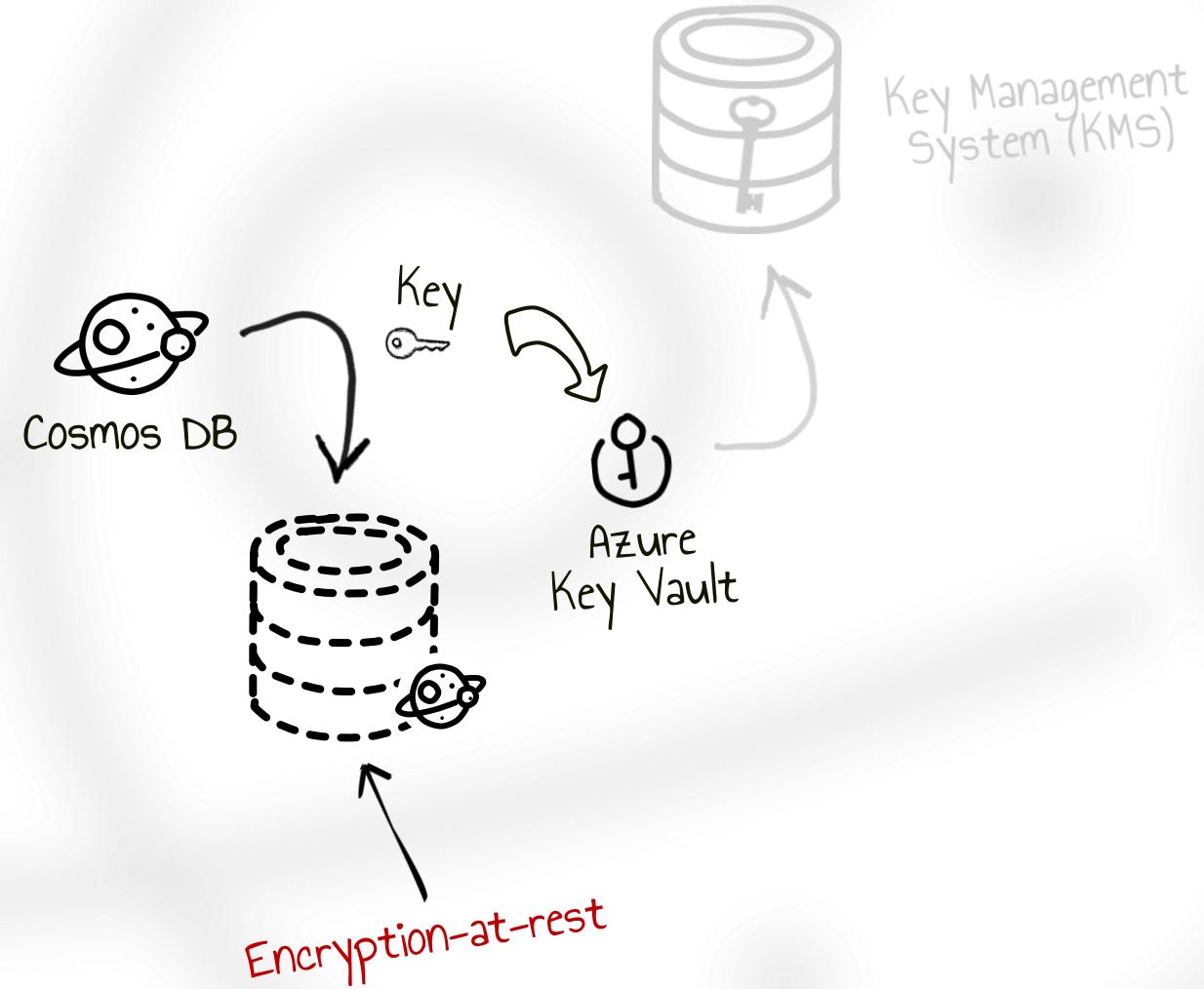
tags: azure, cosmos db, capability, database, application, security

Encryption



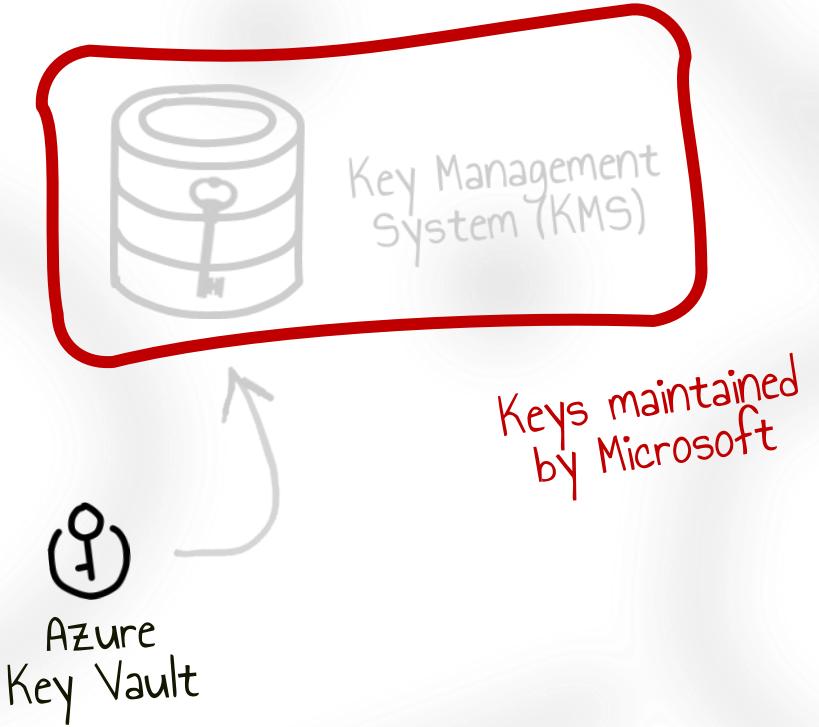
tags: azure, cosmos db, capability, database, application, security

Encryption



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

Encryption



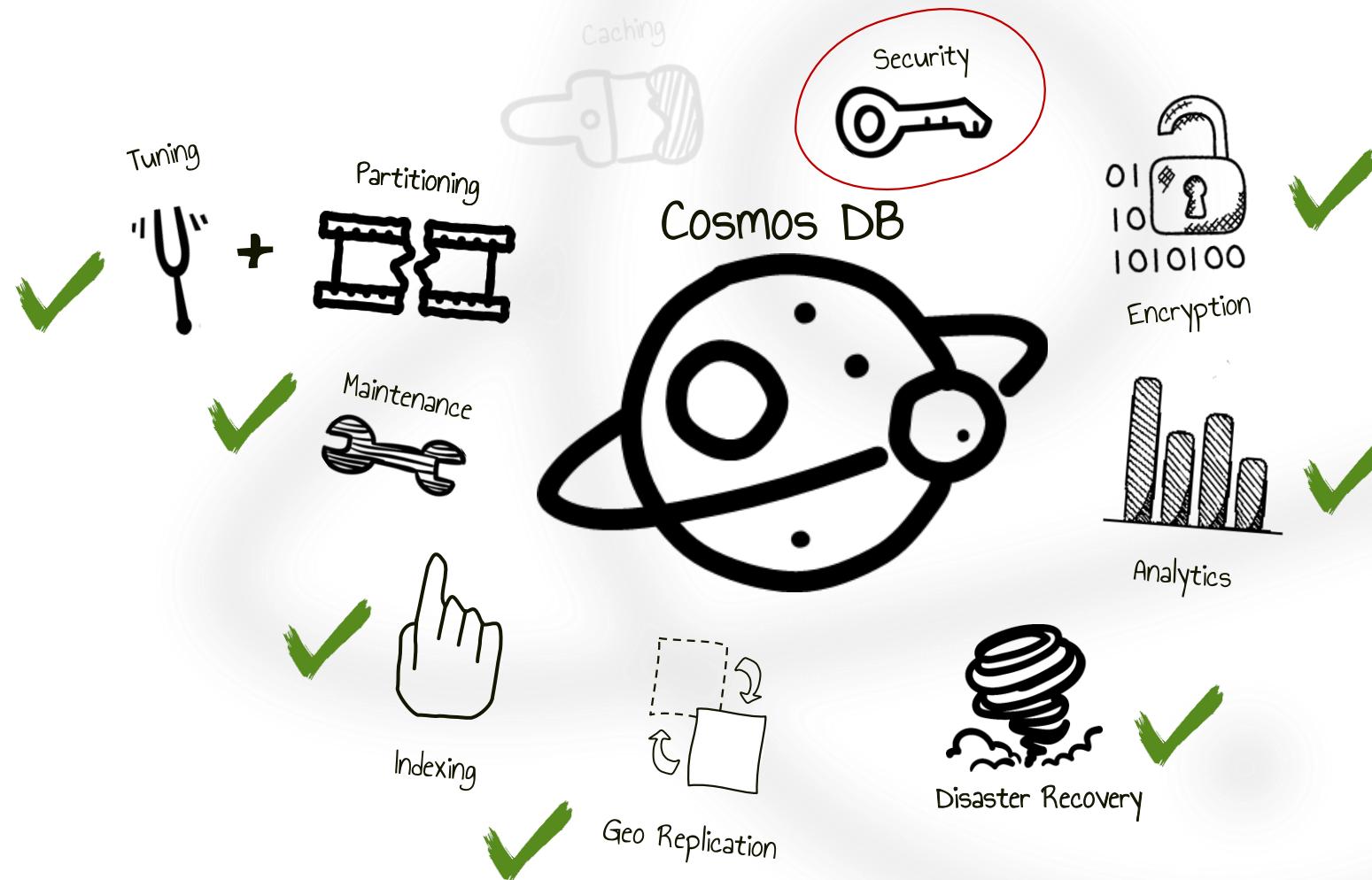
tags: azure, cosmos db, capability, database, application, security

Encryption



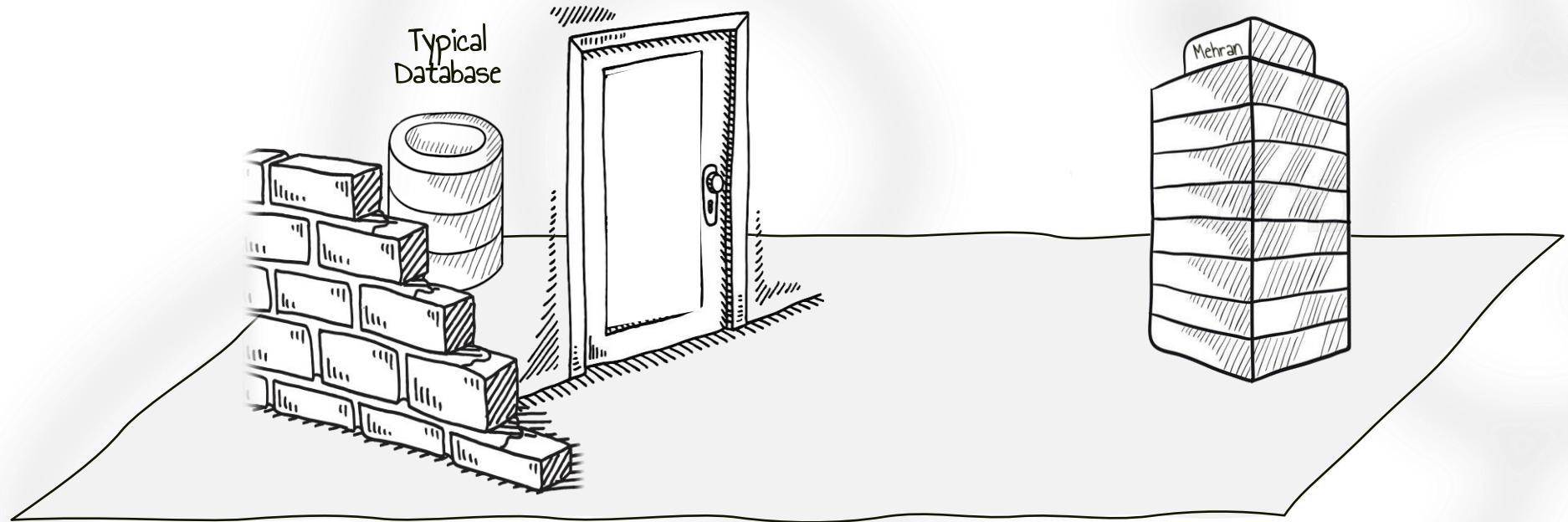
tags: azure, cosmos db, capability, database, application

Azure Cosmos DB



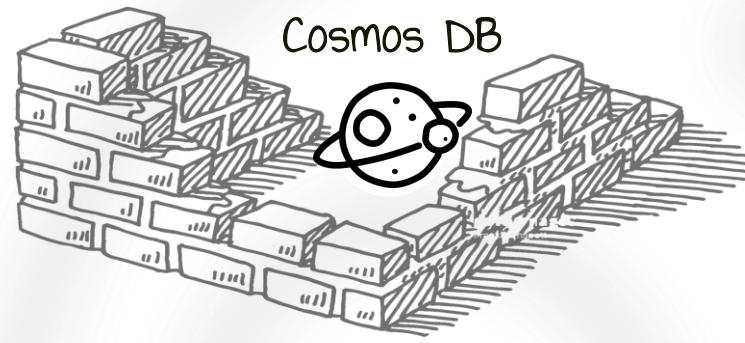
tags: azure, cosmos db, capability, database, application

Security

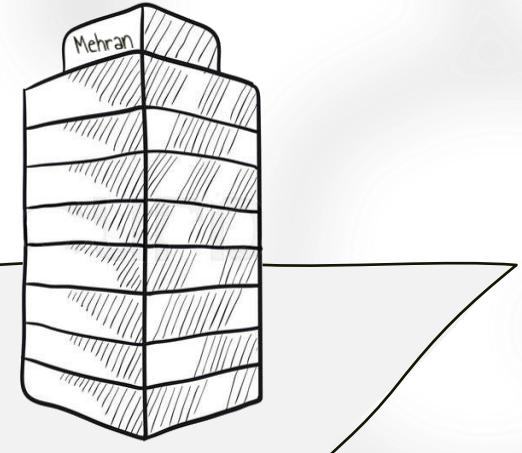


tags: azure, cosmos db, capability, database, application

Security

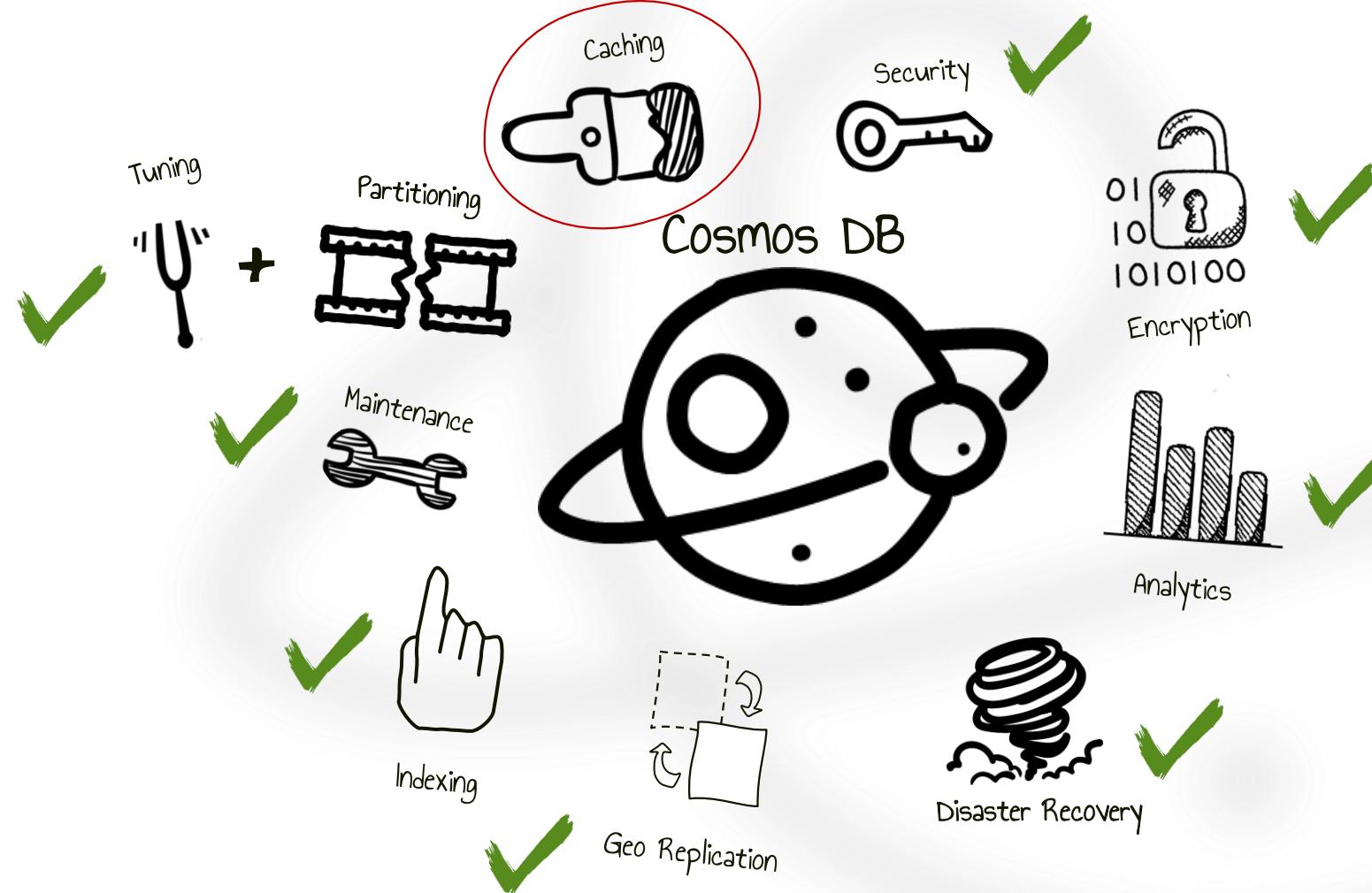


IP Filtering



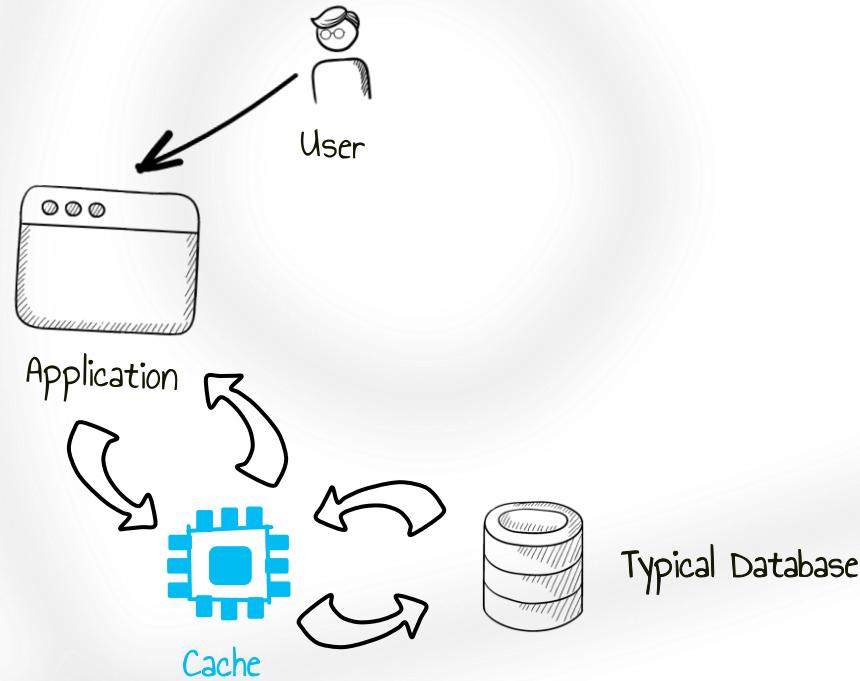
tags: azure, cosmos db, capability, database, application

Azure Cosmos DB



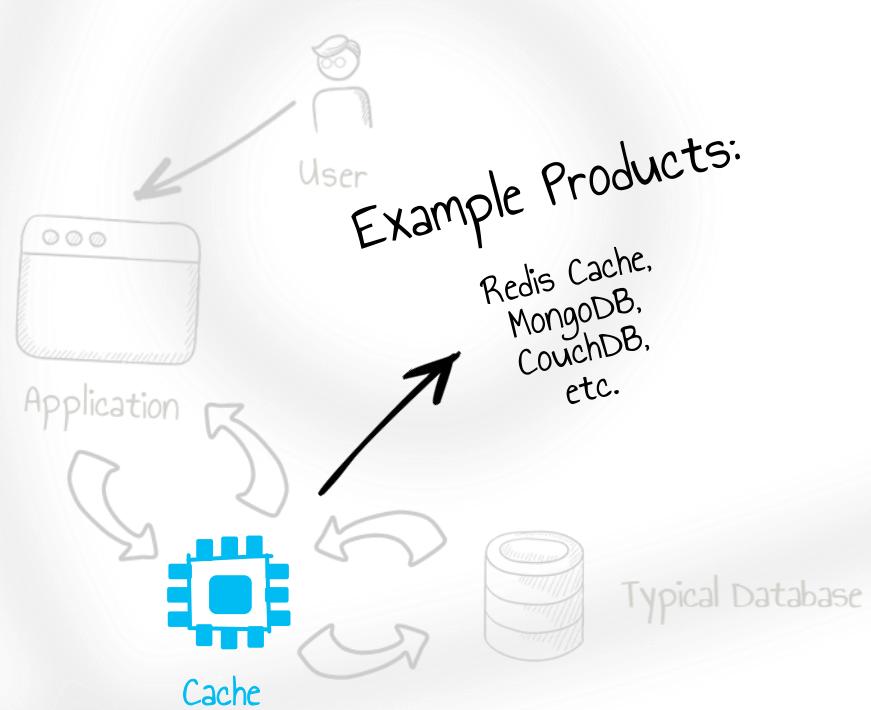
tags: azure, cosmos db, performance, cache

Caching



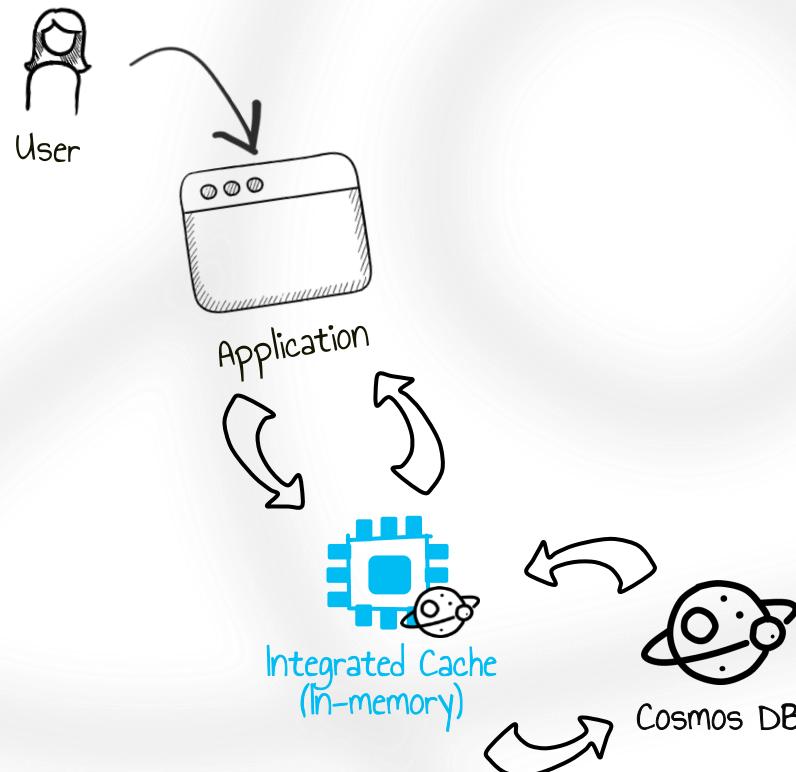
tags: azure, cosmos db, performance, cache

Caching



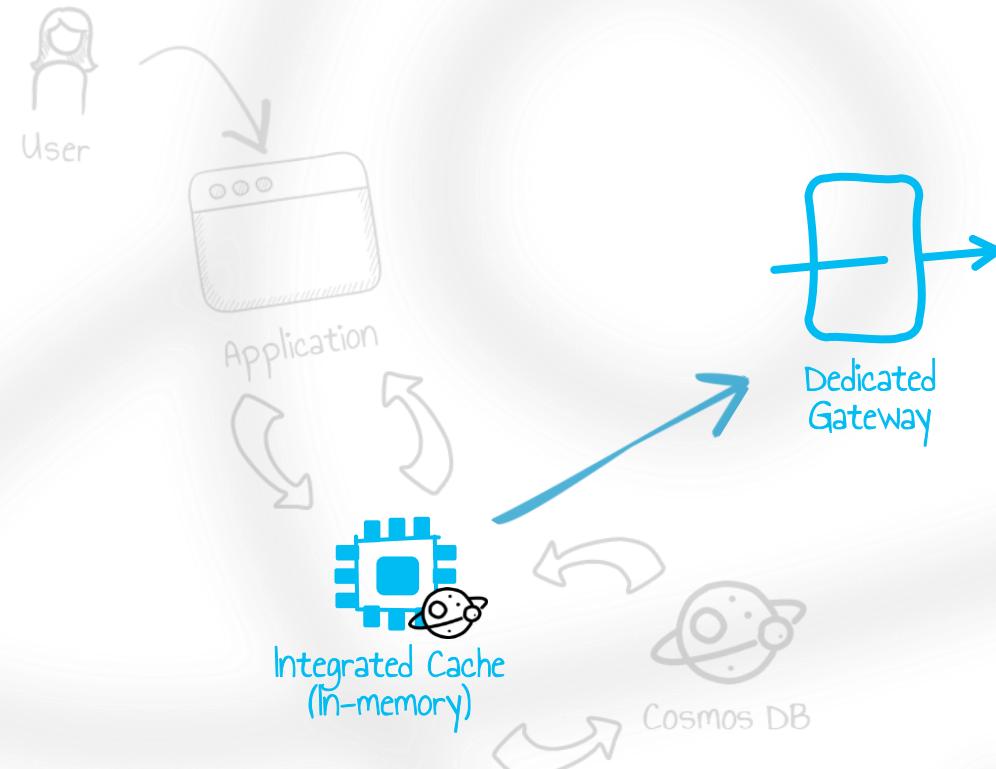
tags: azure, cosmos db, performance, cache, integrated, gateway, dedicated

Caching



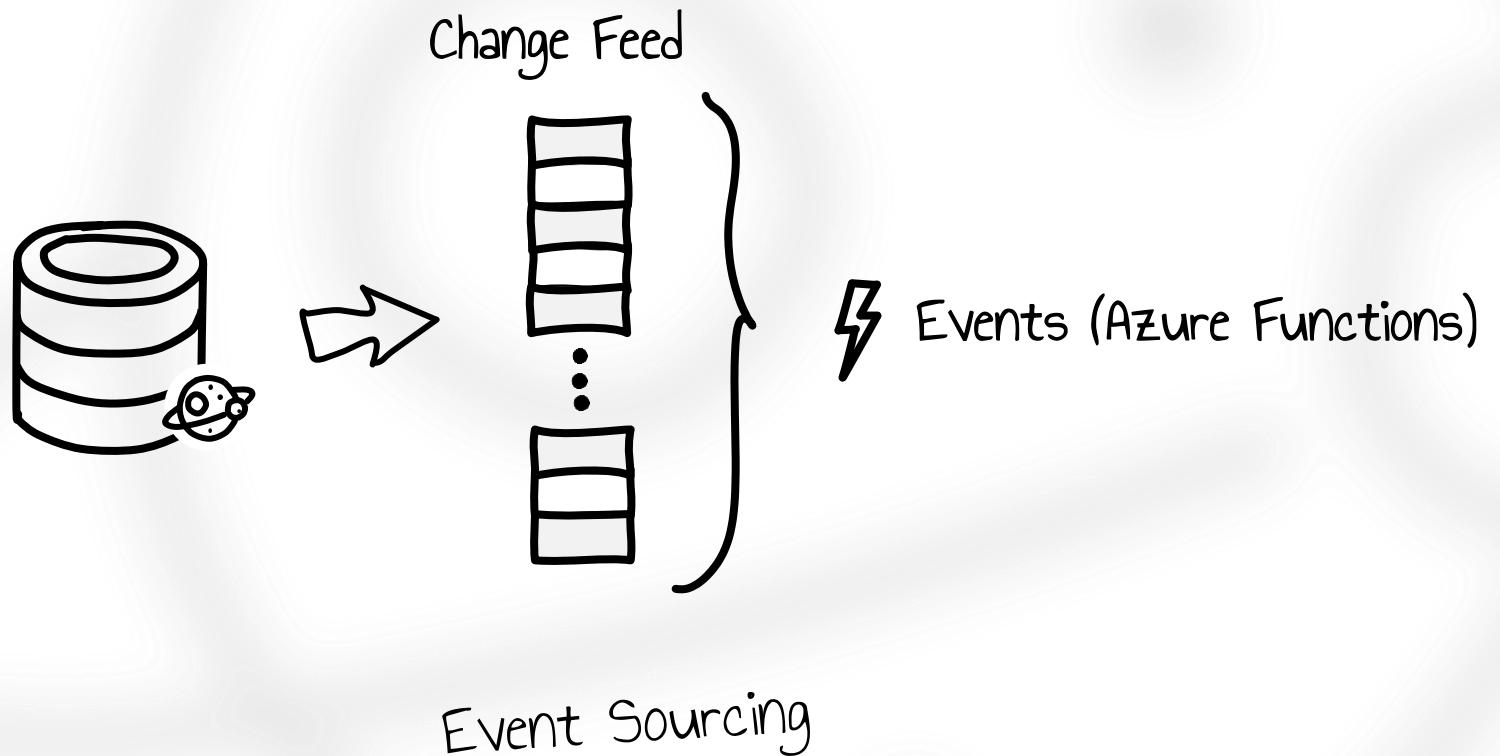
tags: azure, cosmos db, performance, cache, integrated, gateway, dedicated

Caching



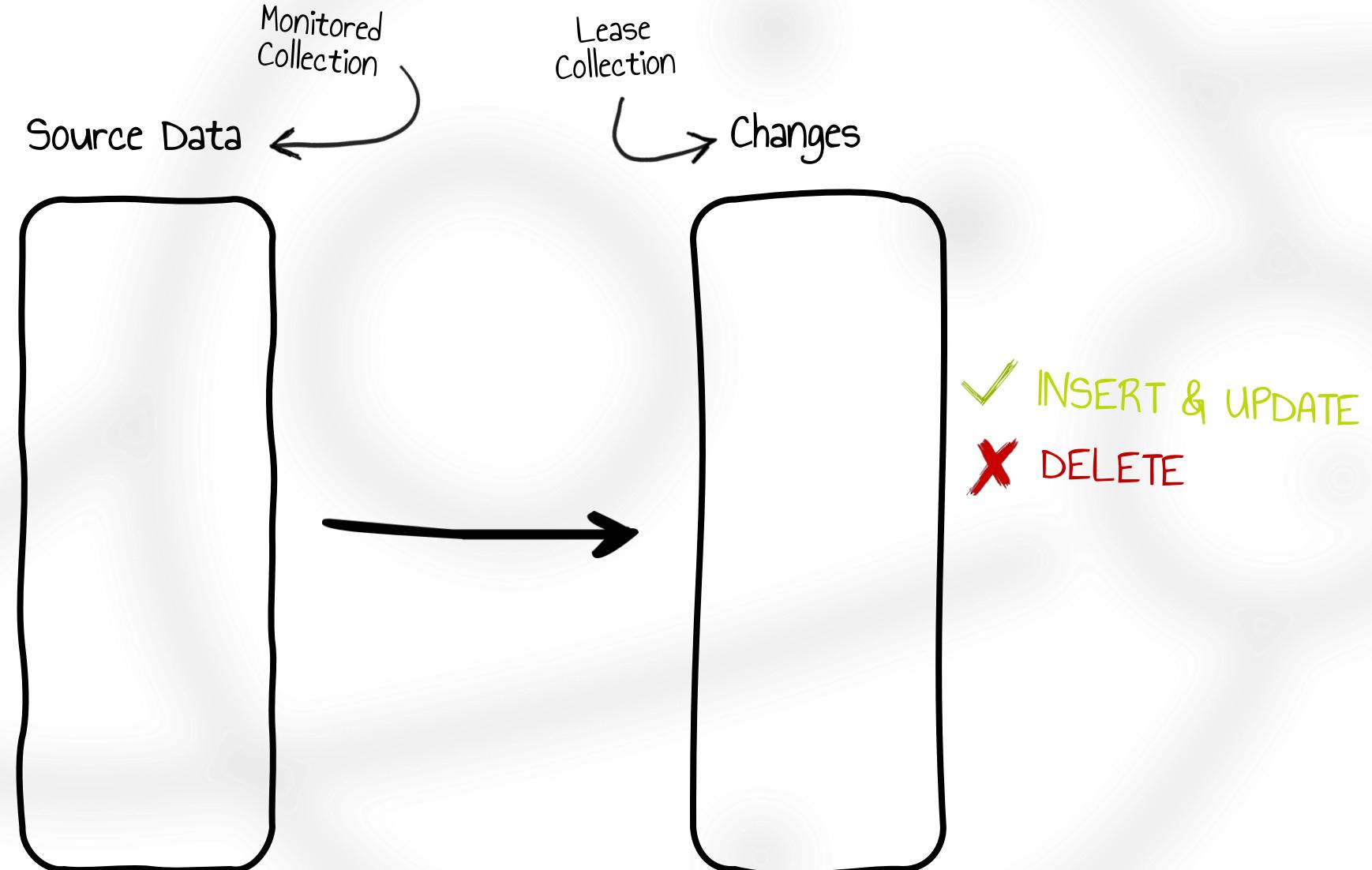
tags: azure, cosmos db, changes, events, lease

Change Feed

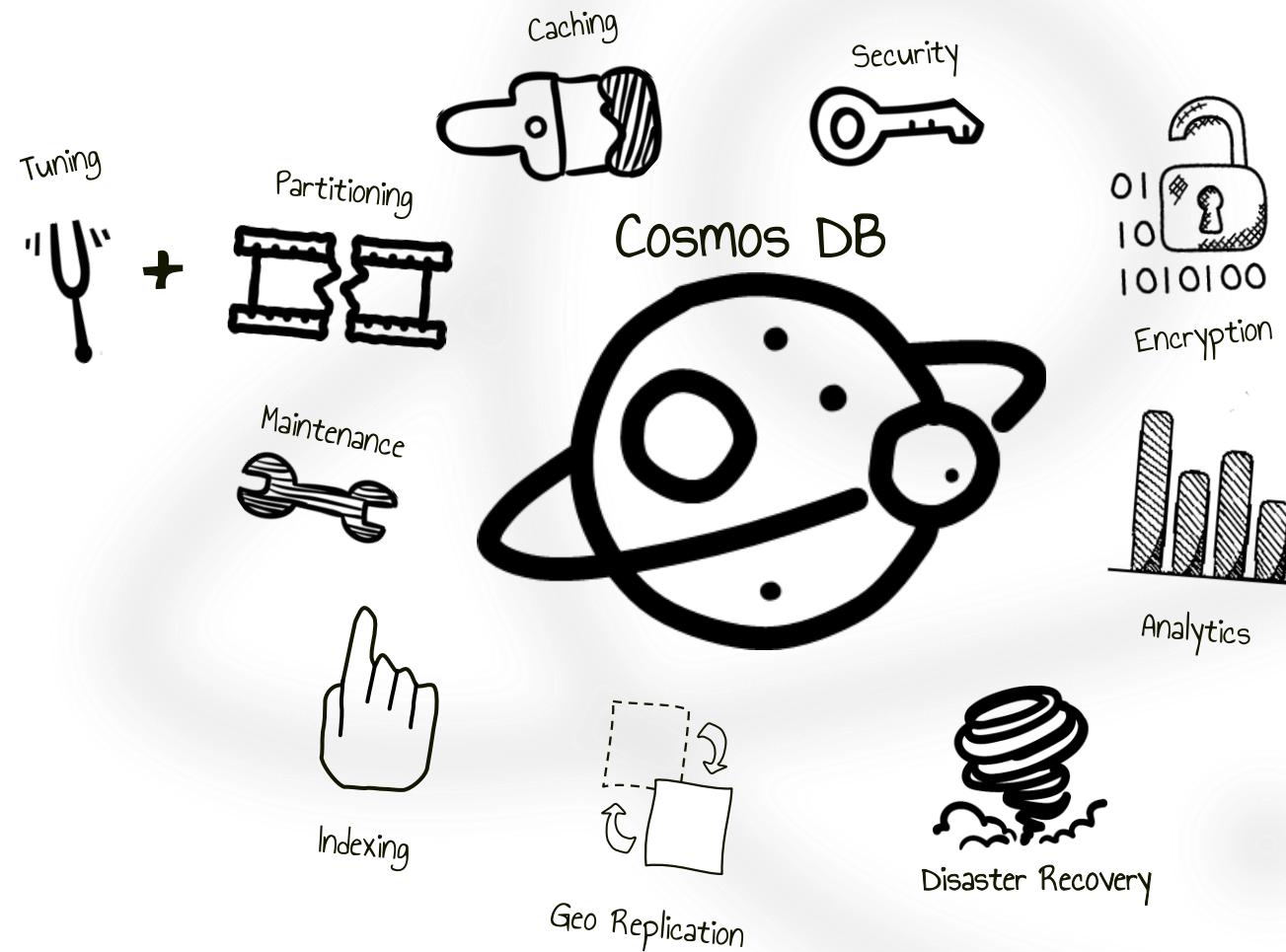


tags: azure, cosmos db, changes, events, lease

Change Feed



Section Recap



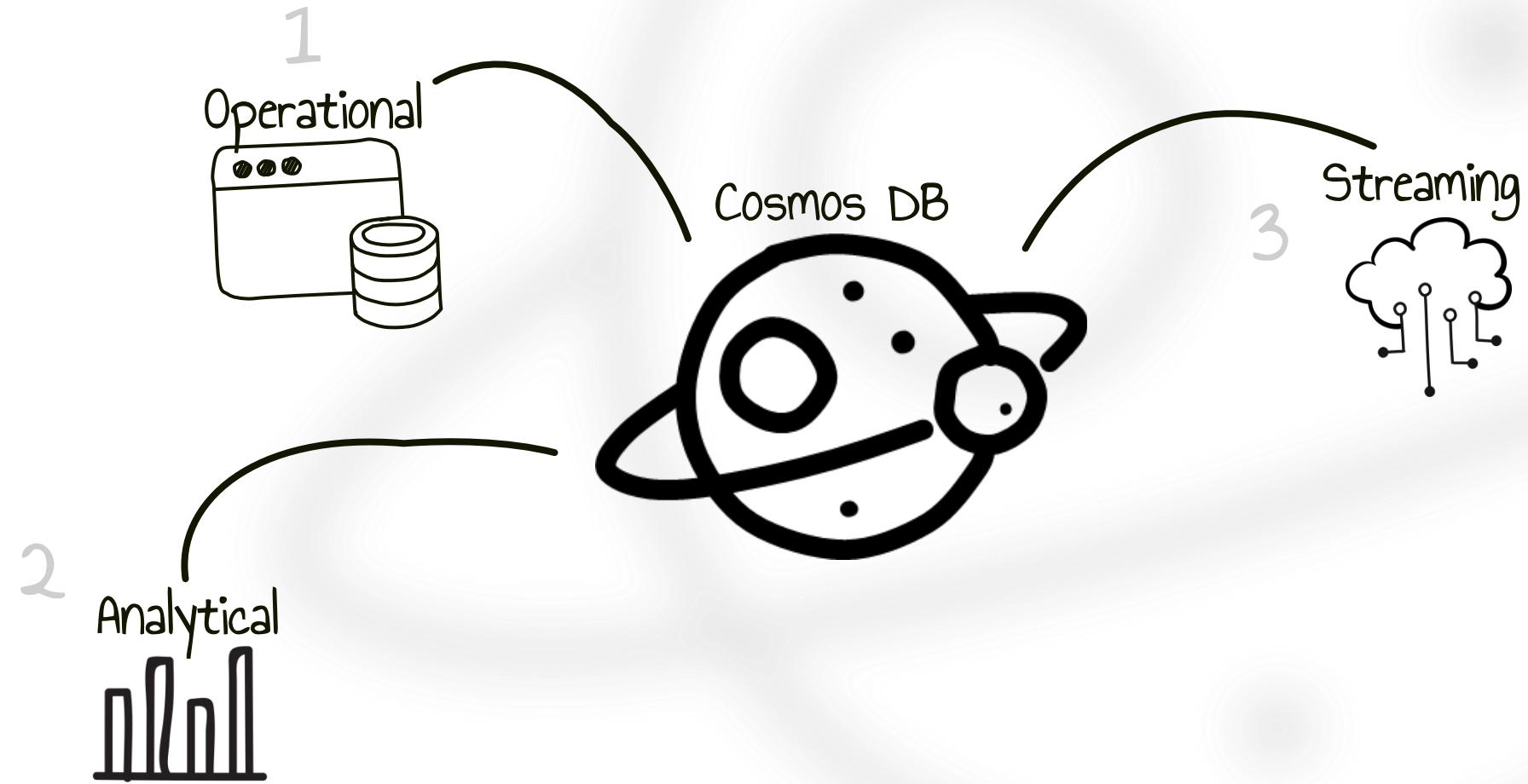
Workloads

Scenarios for using Azure Cosmos DB



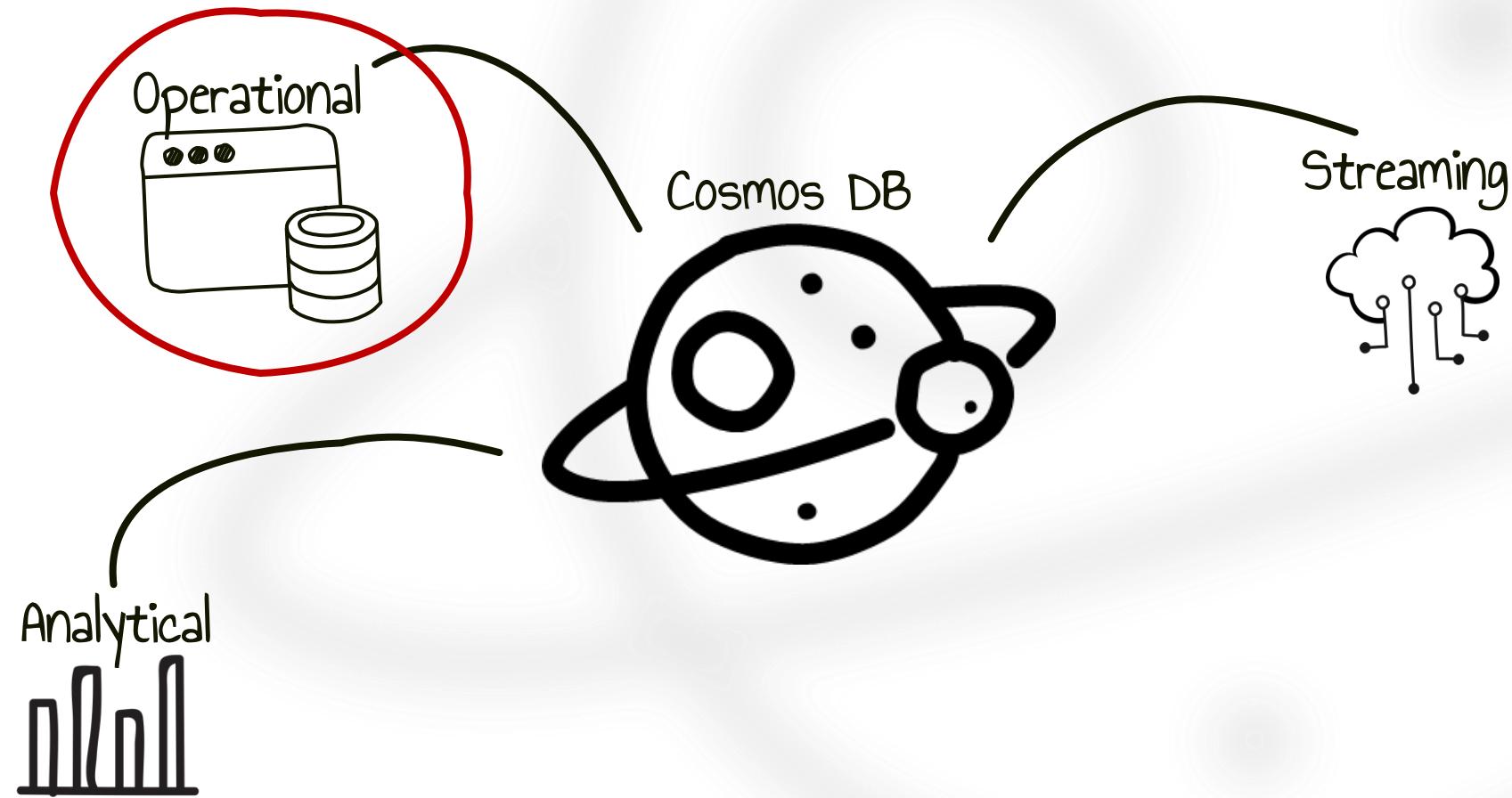
tags: azure, cosmos db, scenario, use-case

Workloads



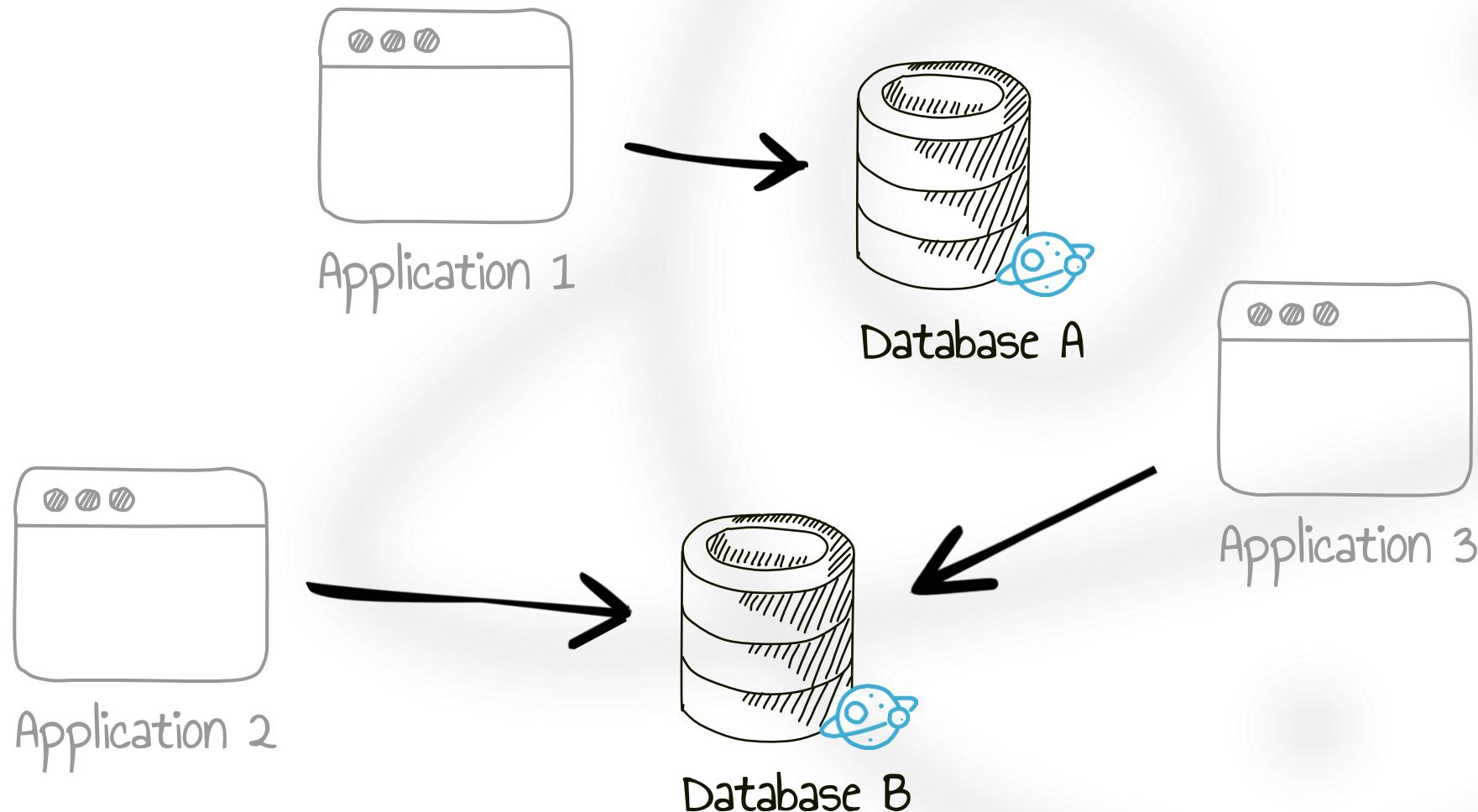
tags: azure, cosmos db, scenario, use-case

Workloads



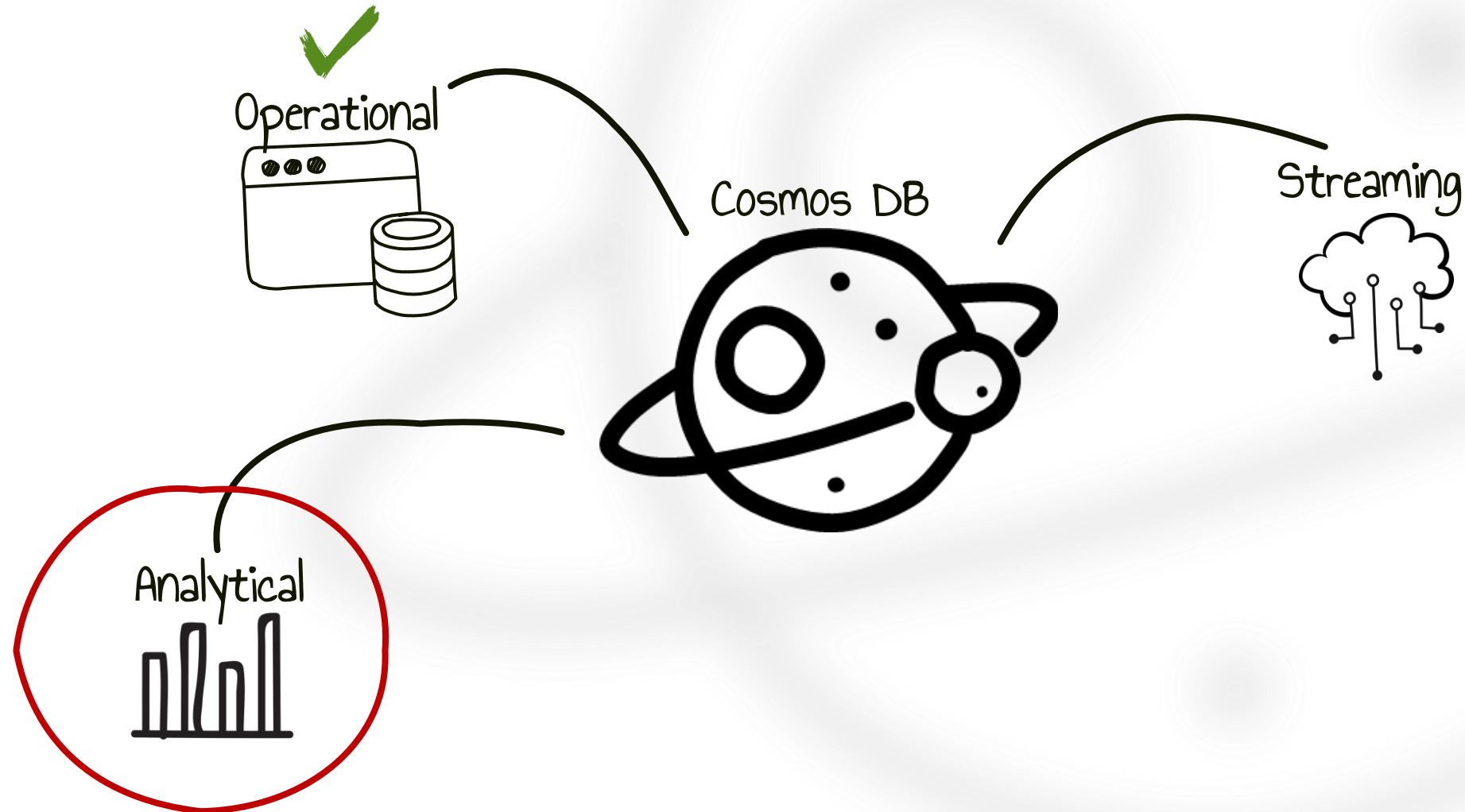
tags: azure, cosmos db, web application, database

Operational Workloads



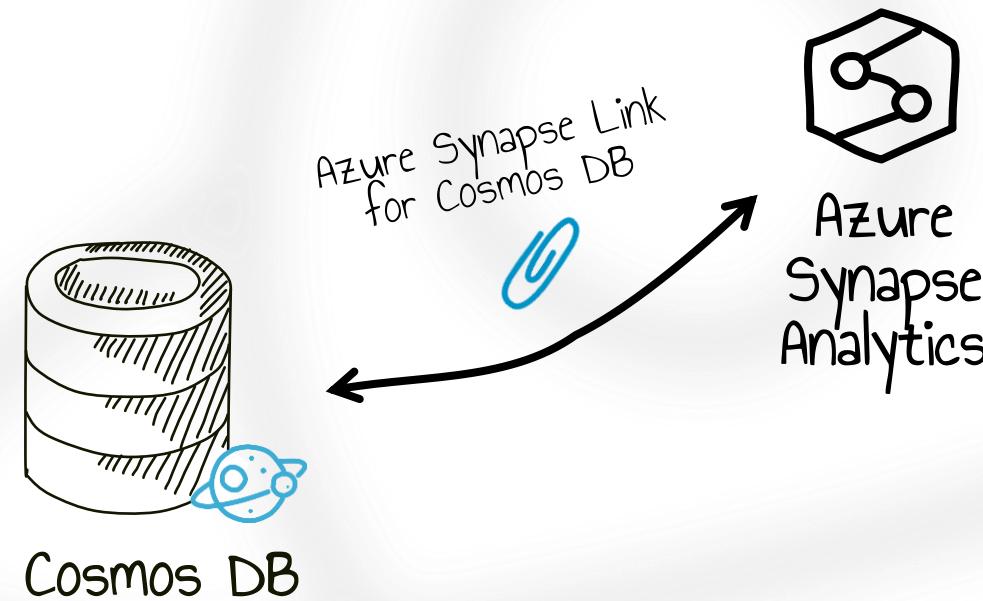
tags: azure, cosmos db, scenario, use-case

Workloads



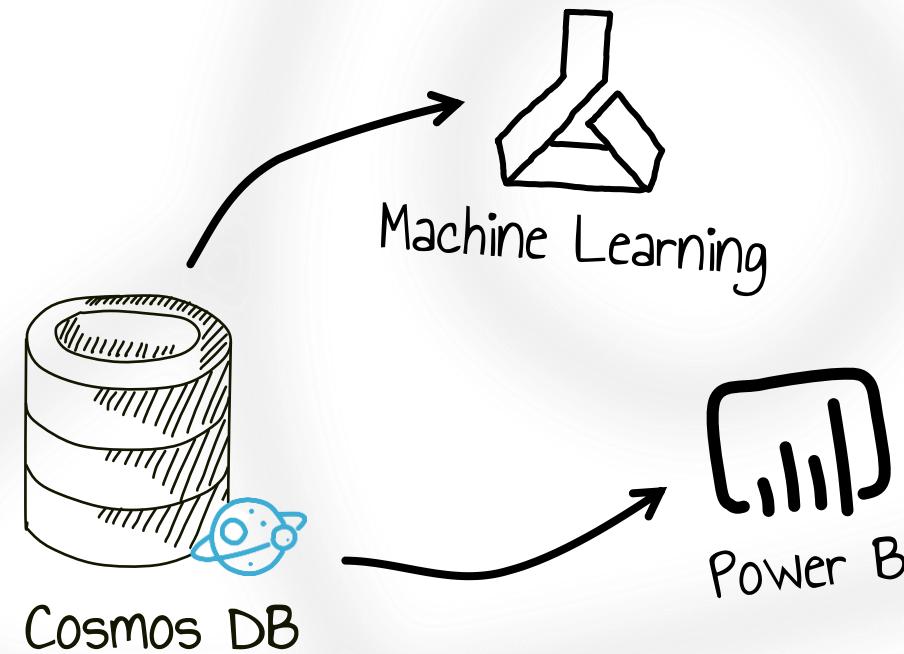
tags: azure, cosmos db, report, visualization

Analytical Workloads



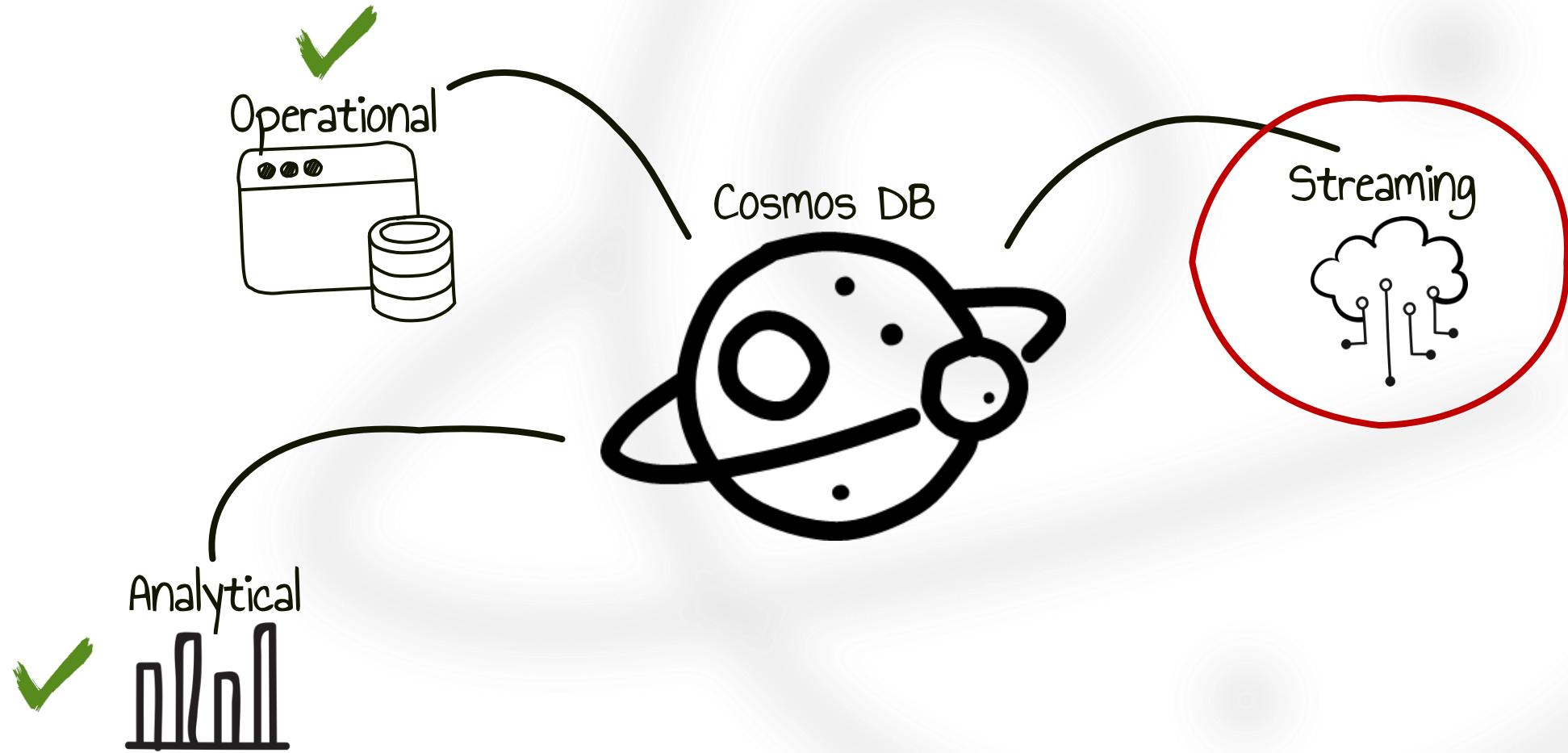
tags: azure, cosmos db, report, visualization

Analytical Workloads



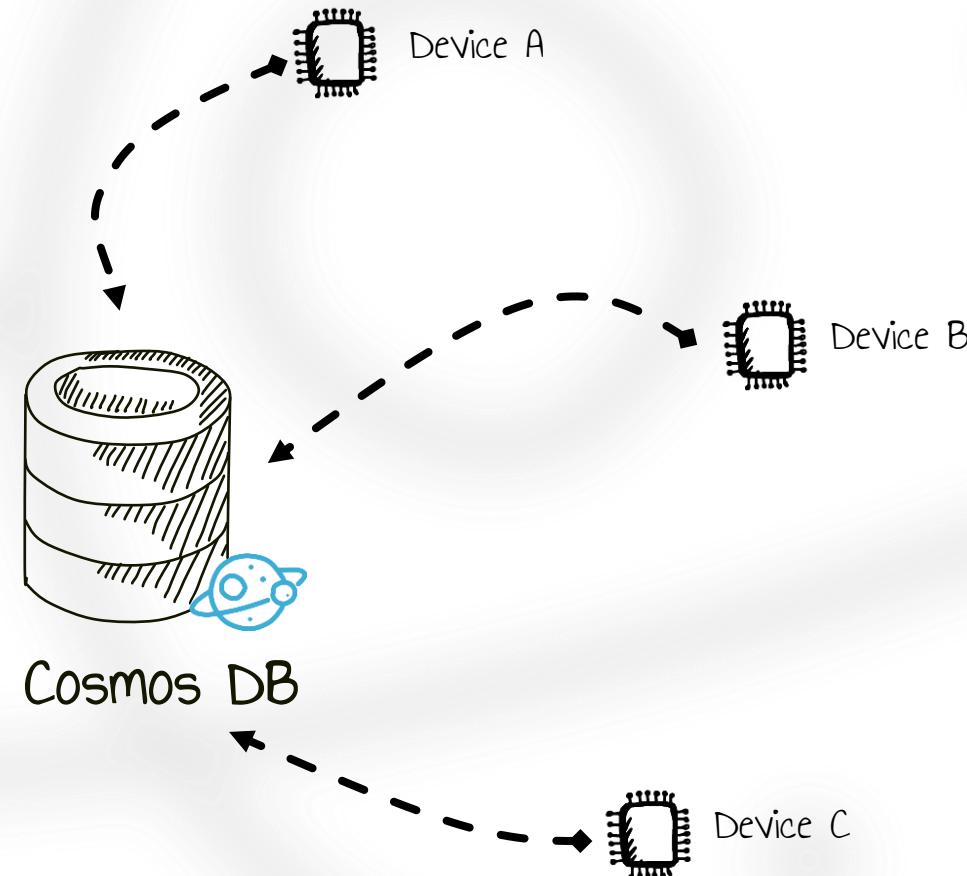
tags: azure, cosmos db, scenario, use-case

Workloads



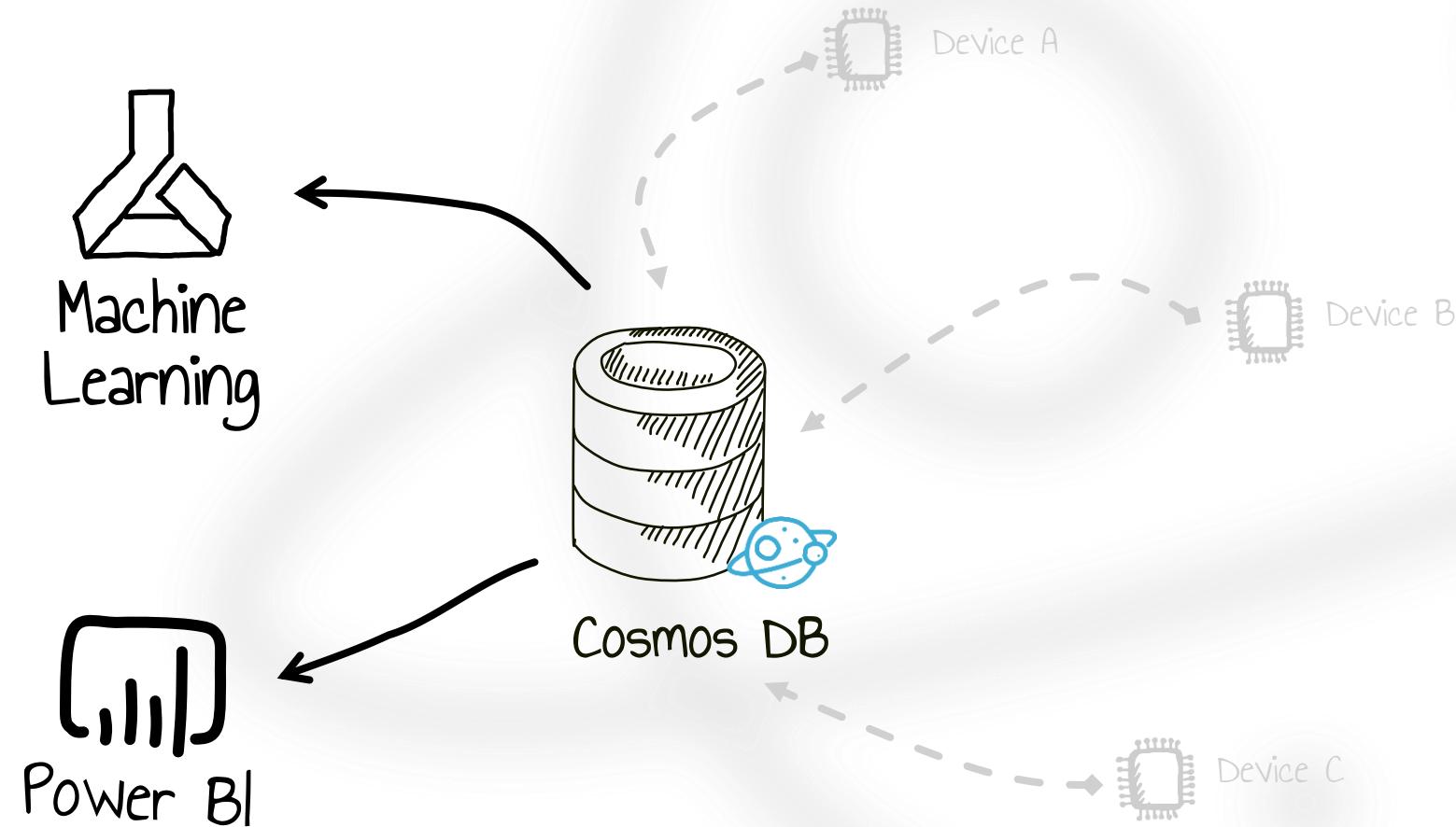
tags: azure, cosmos db, iot

Data Streaming Workloads



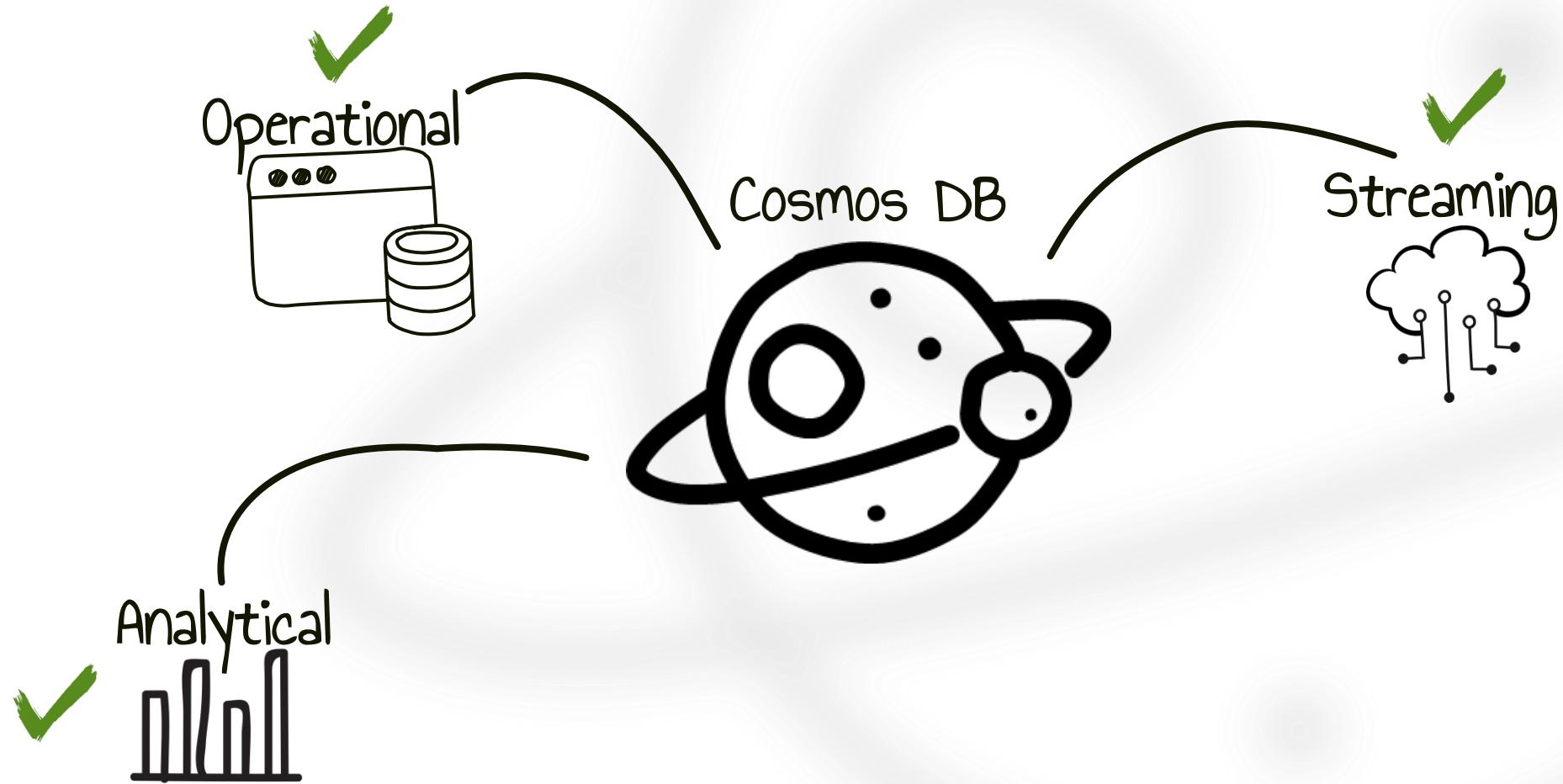
tags: azure, cosmos db, iot

Data Streaming Workloads



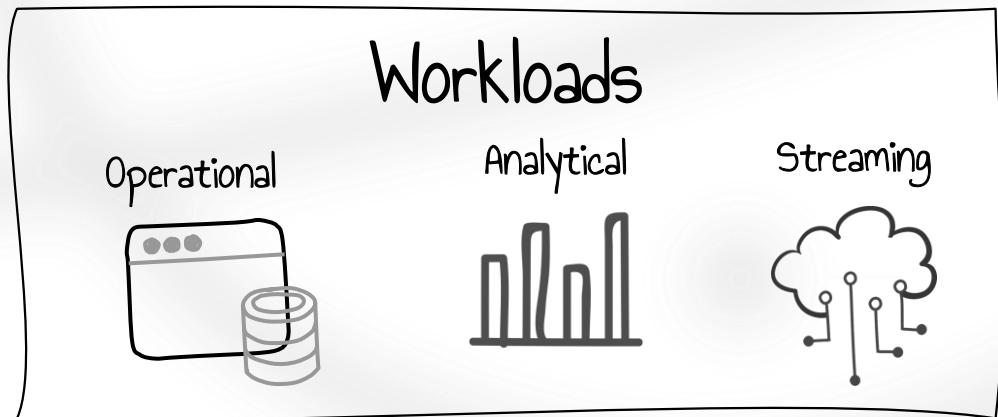
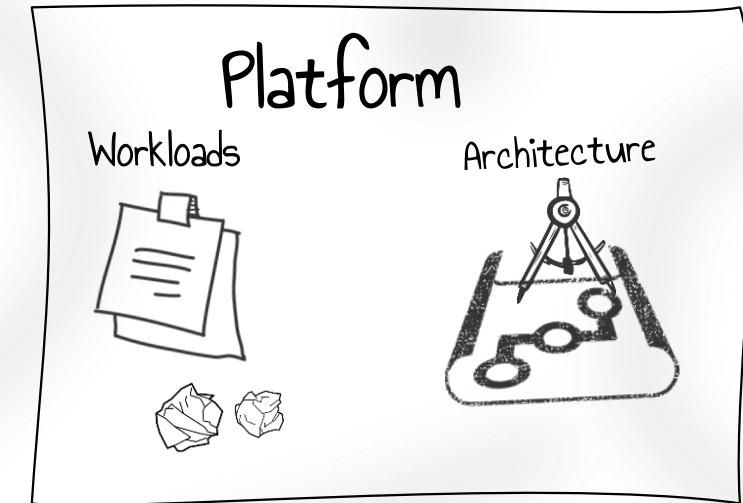
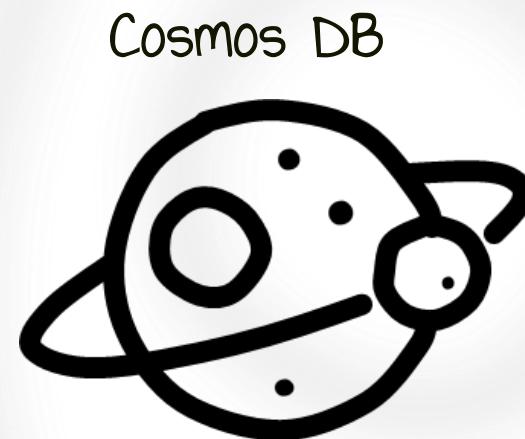
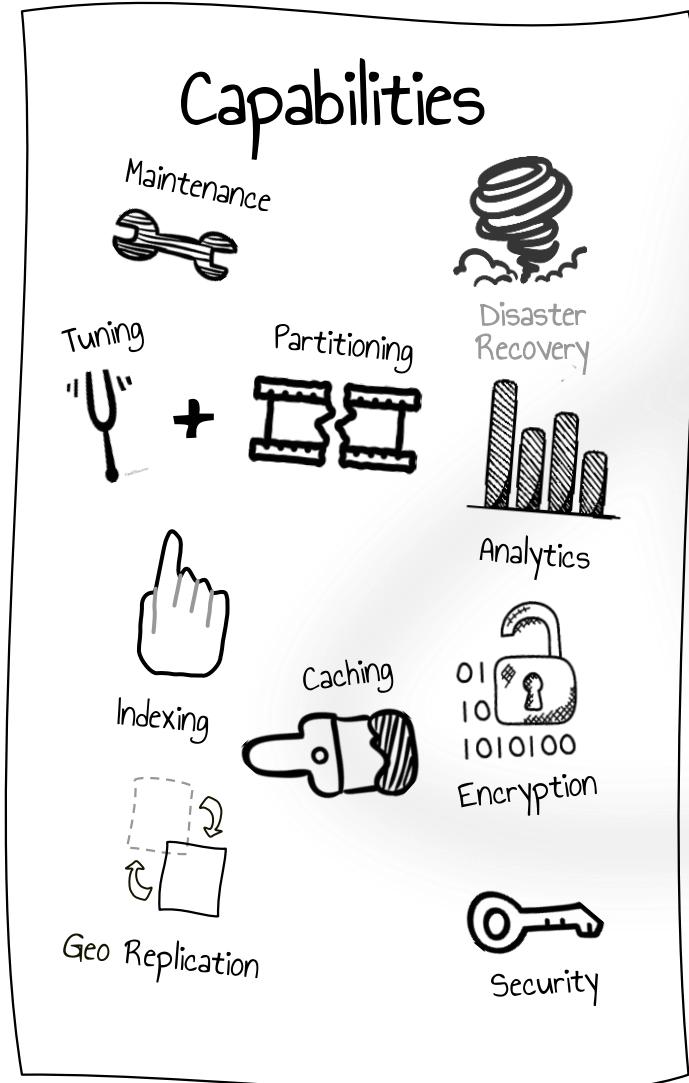
tags: azure, cosmos db, scenario, use-case

Workloads



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

Recap



Thank You!



LIKE

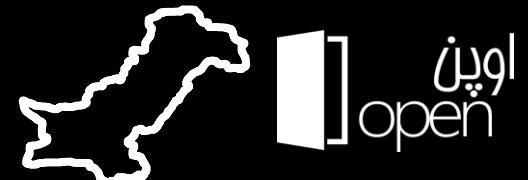


SUBSCRIBE

Voice Generated Using



Azure
Cognitive Services



Video Created By



Adnan Hashmi

aka.ms/Adnan

pkstn.co/Adnan