AZURE COSMOS DB FOR DUMMIES

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Guilty pleasures…

SERVERLESS

Likes…

Badges…

Microsoft CERTIFIED Master: SQL Server

MVP Microsoft® Most Valuable Professional

Microsoft Community Contributor AWARD

Microsoft CERTIFIED Solutions Expert Data Platform

Microsoft CERTIFIED Solutions Expert Data Management and Analytics

PASS

Community…

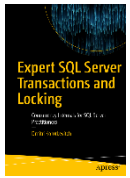
PASS HYBRID VIRTUAL CHAPTER

SQLEA

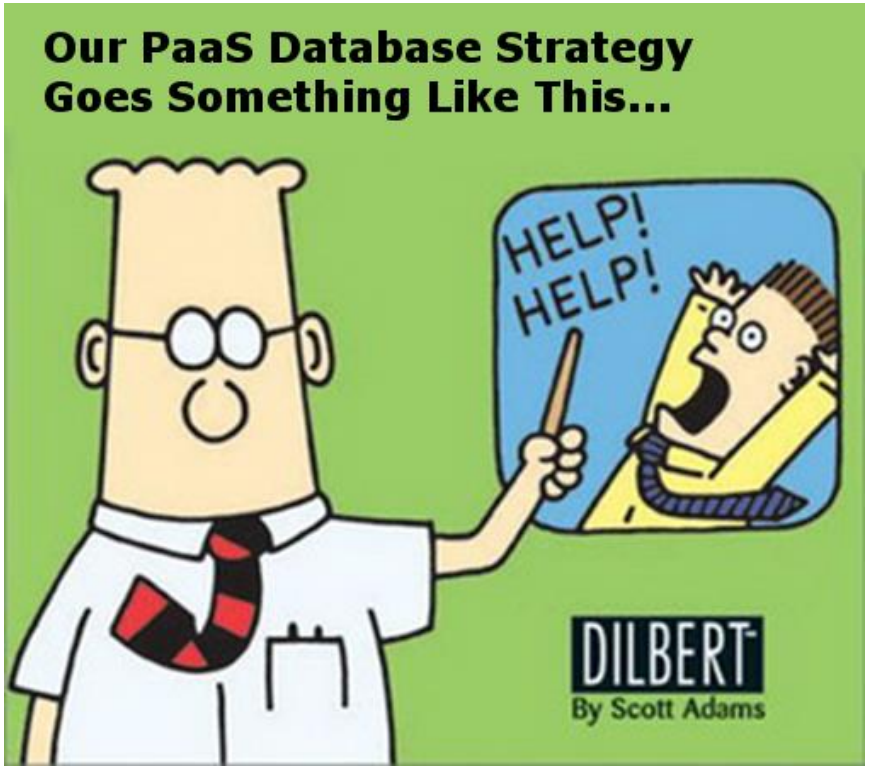
SQL SATURDAY CAMBRIDGE

SHAREPOINT SATURDAY CAMBRIDGE

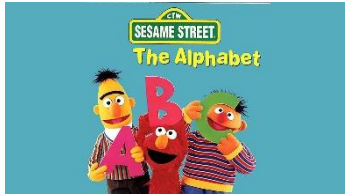
Tech editor…



Agenda



NoSQL, Datastructures, and Relational



Introduction to Cosmos DB

Creating and using our Cosmos DB container

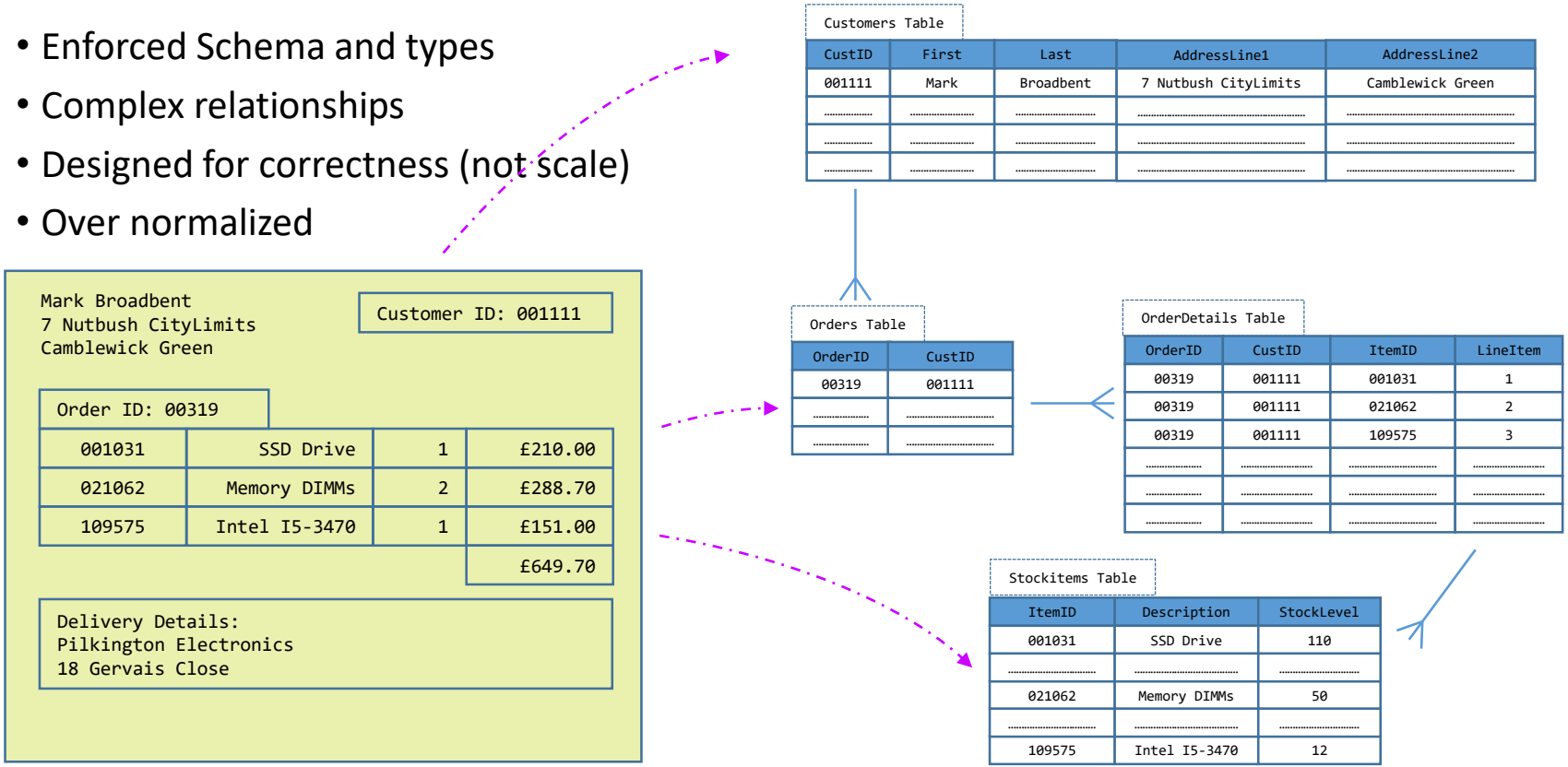
Partitioning, Indexing, and Geo-Replication

Azure Cosmos DB customers

History of NoSQL

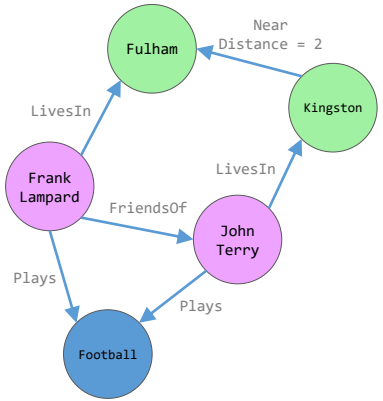
Relational Database Management Systems

- Enforced Schema and types
- Complex relationships
- Designed for correctness (not scale)
- Over normalized

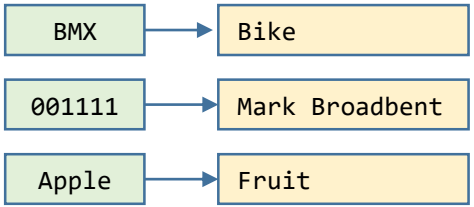


What is NoSQL?

- “Not only” SQL
- Schema-less datasets
- Designed for scale
- No-Normalization



CustID	FirstName	LastName
001111	Mark	Broadbent
021567	Fred	Titmus
069974	Frank	Lampard

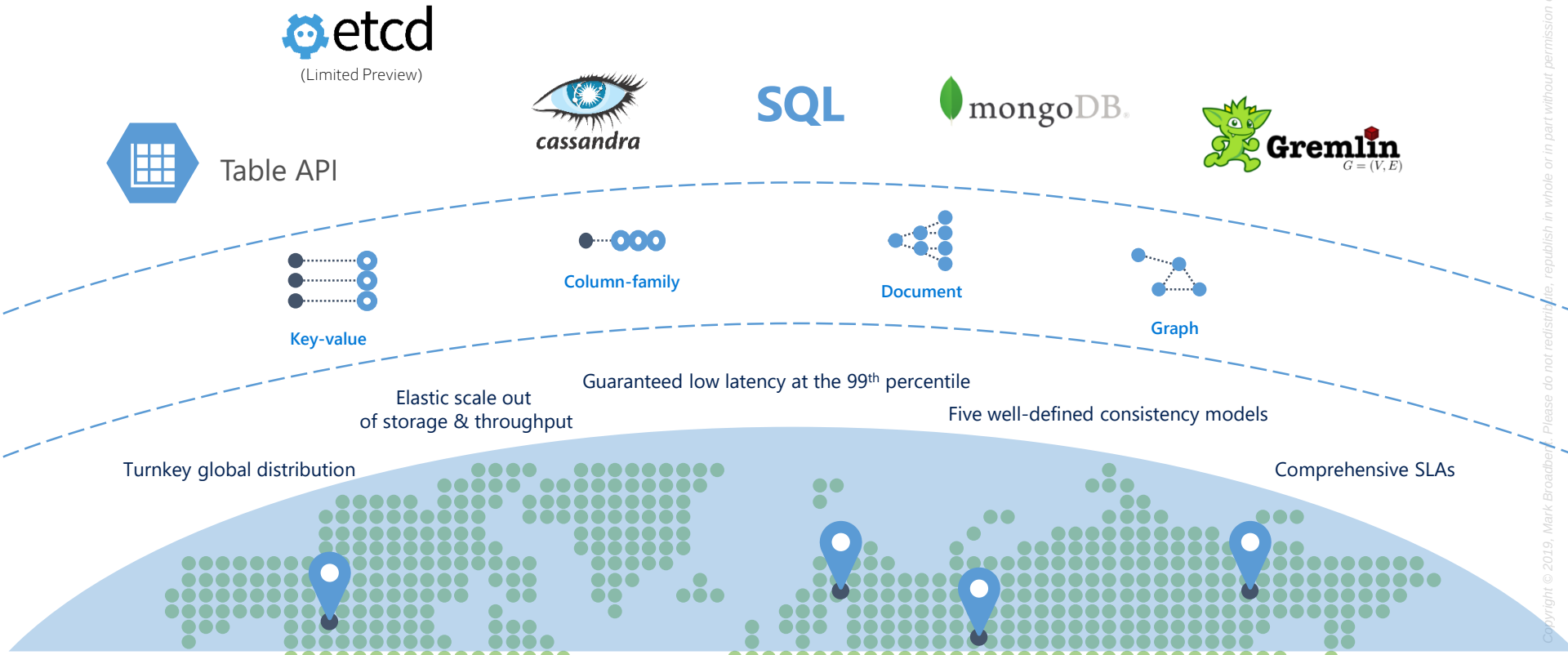



```
{
    "CustomerId": "001111",
    "Address": {
        "line1": "7 Nutbush CityLimits",
        "line2": "Camblewick Green"
    },
    "Delivery": {
        "line1": "Pilkington Electronics",
        "line2": "18 Gervais Close"
    },
    "OrderId": "00319",
    "OrderDetails": [
        {
            "ItemId": "001031",
            "ItemDesc": "SSD Drive",
            "Qty": "1",
            "LineTotal": "210.00"
        },
        {
            "ItemId": "021062",
            "ItemDesc": "Memory DIMMs",
            "Qty": "2",
            "LineTotal": "288.70"
        },
        {
            "ItemId": "109575",
            "ItemDesc": "Intel I5-3470",
            "Qty": "1",
            "LineTotal": "151.00"
        }
    ]
}
```

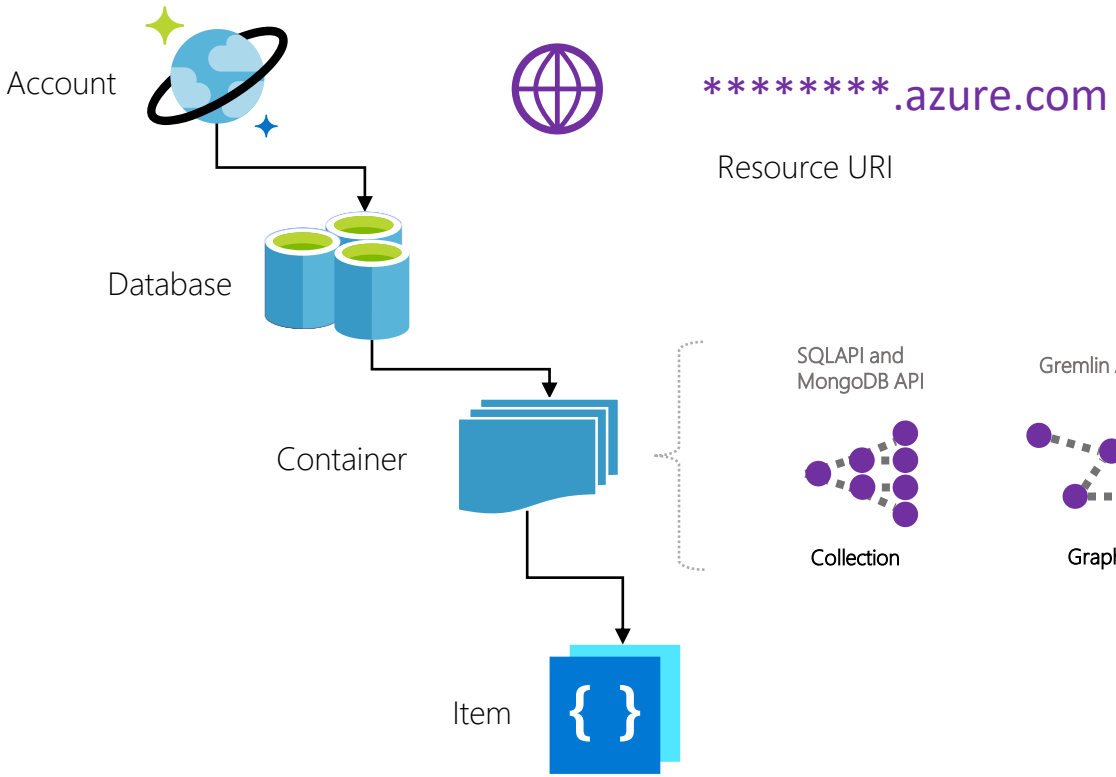
Demo

Create our first Cosmos DB account

What is Cosmos DB?



Resource Model Hierarchy

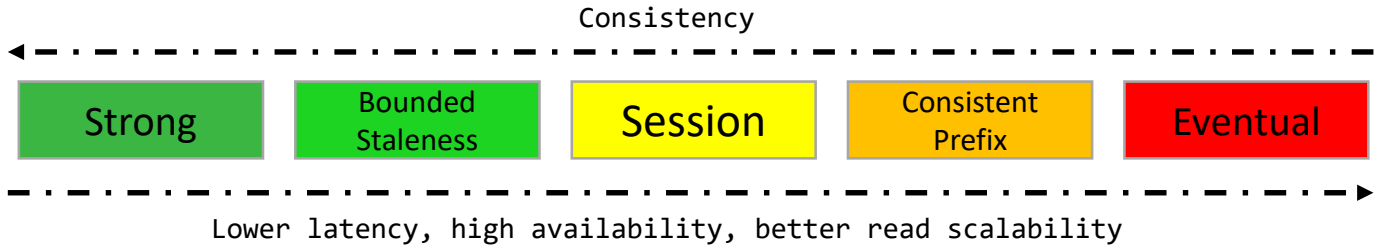


Demo

Creating SQL API containers and Querying data

Consistency

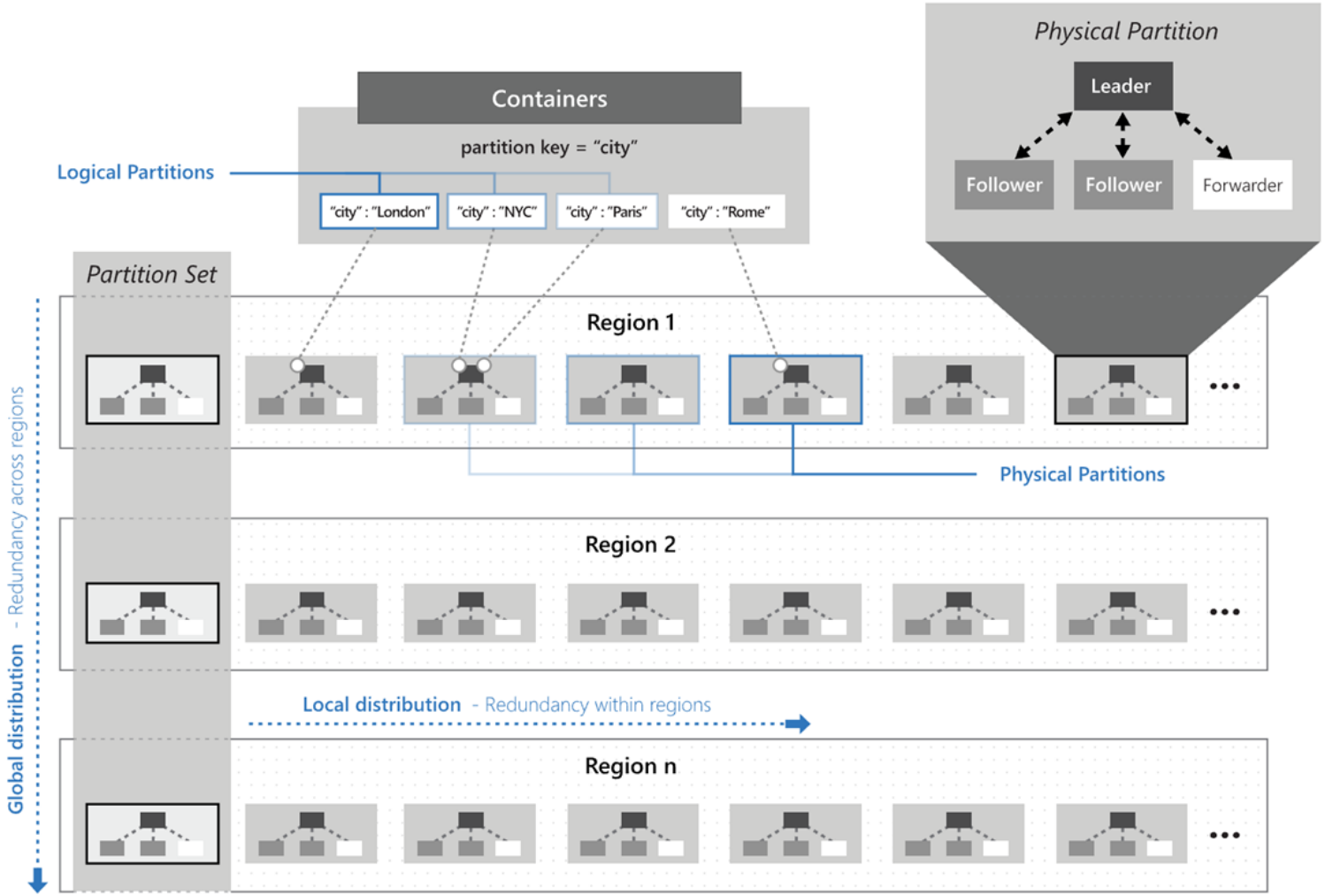
- Consistency Models are:
  - Strong – committed results visible to all partitions in all regions
  - Bounded Staleness – ordered changes but data stale only by k prefixes or t interval
  - Session – ordered changes and session writes visible immediately within the session, but may be stale outside of session
  - Consistent Prefix – ordered changes, but reads may be stale
  - Eventual – stale reads and possible out of order

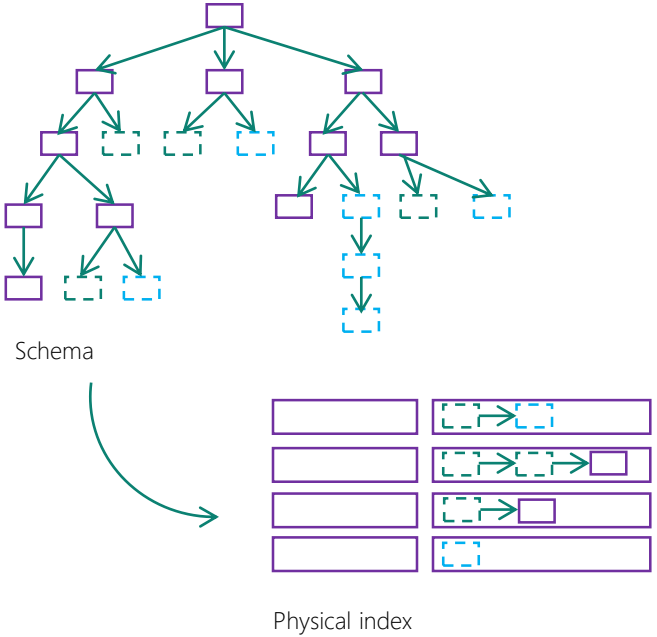


- Multi-master replicas introduce lost update problem
- Protect your writes using the **_etag** document property

Demo

Consistency Concerns Exist In All DBs – Read Consistency and Lost Updates





Schema-agnostic, automatic indexing

At global scale, schema/index management is painful

Automatic and synchronous indexing

Hash, range, and geospatial

Works across every data model

Highly write-optimized database engine

Demo

Indexing

Global Replication, Database-Multi Master

In Summary…

- Use whatever works for you – **there is no battle between NoSQL and SQL**
- Cosmos DB is Microsoft's multi-model NoSQL PaaS db providing many benefits:
  - 99.999% availability, throughput and consistency SLAs
  - Global read AND write scale
  - Automatic Indexing and Partitioning

- Is a great choice for:
  - Migrating on-premises workloads (particularly open source NoSQL offerings)
  - Data Science exploration or Kubernetes persisted data store
  - Global retailers AND small NoSQL deployments.

However…

- Has some quirks/ annoyances (hopefully some will be addressed)
  - Database/ Container sizing quirk
  - Container partition key immutable (and case sensitive)
  - Inability to swap API.

- Requires a change in mindset when thinking about
  - The data model and constraints
  - Administration and Development.

Thank you for listening!

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Twitter: @retracement

Blog: http://tenbulls.co.uk

Slideshare: http://www.slideshare.net/retracement

Demo: https://github.com/retracement/cosmosdb_for_dummies

Resources and Q&A: https://tenbulls.co.uk/cheatsheet/cosmosdb