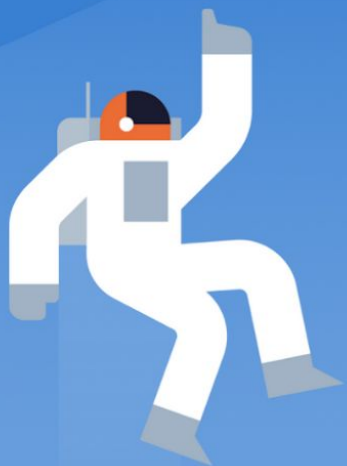


**DataStax**

# Intro to Stargate for Developers

Modern Data Application Development



**LEVEL  
UP**

with the

**DataStax**

**Developers**

**01**

Intro

**02**

Intro to Cassandra  
For Developers

**03**

Unlock your data with  
Stargate API

## Developer Day Agenda

**04**

Use Case  
Conversation

**05**

Questions / Wrap Up

# Who Are We



Mike Waldrop  
michael.waldrop@datastax.com



Steven Matison  
steven.matison@datastax.com

# Resources

- <http://astra.datastax.com> - go and sign up for free developer account.
- Exercises link - <https://github.com/mwaldropdatastax/stargate-intro-workshop>

# Modern Data Apps Require an Open Data Stack

Developers

Modern Data APIs

Database

Kubernetes

Object Storage

Public | Private | Hybrid | Multi-Cloud



**Developer Ready.**  
**Designed for the new apps of tomorrow.**

API adoption CAGR ~20% 2020-2024

Microservices adoption CAGR 21.6%



**Kubernetes-Based.**  
**Transforming the enterprise stack.**

Enterprises adoption is 48% in 2020  
going to 85% by 2025

80% of ISVs will rebuild their stacks  
for containers by 2025



**Cloud-Delivered.**

47% of businesses write applications specifically  
leveraging underlying cloud infrastructure

Serverless and Function-as-service has 75% annual  
growth rate

# Innovation Momentum for the Open Data Stack



Cassandra in the Cloud

Stargate APIs

Pay-as-you-use with Serverless



Kubernetes Operator

Storage Attached Indexes

Stargate APIs

Simplified backup & Restore



Open Data API Gateway

Schemaless, GraphQL, REST, CQL..

Integrated cloud security

Engagement from Netflix, Yelp, Burberry, ..



**Production-ready** platform for running Apache Cassandra on Kubernetes



Cloud-native and multi-tenant architecture lowers TCO

Open community innovation leapfrogging Kafka



Support Subscription

Tools (Medusa, Reaper) and Expertise

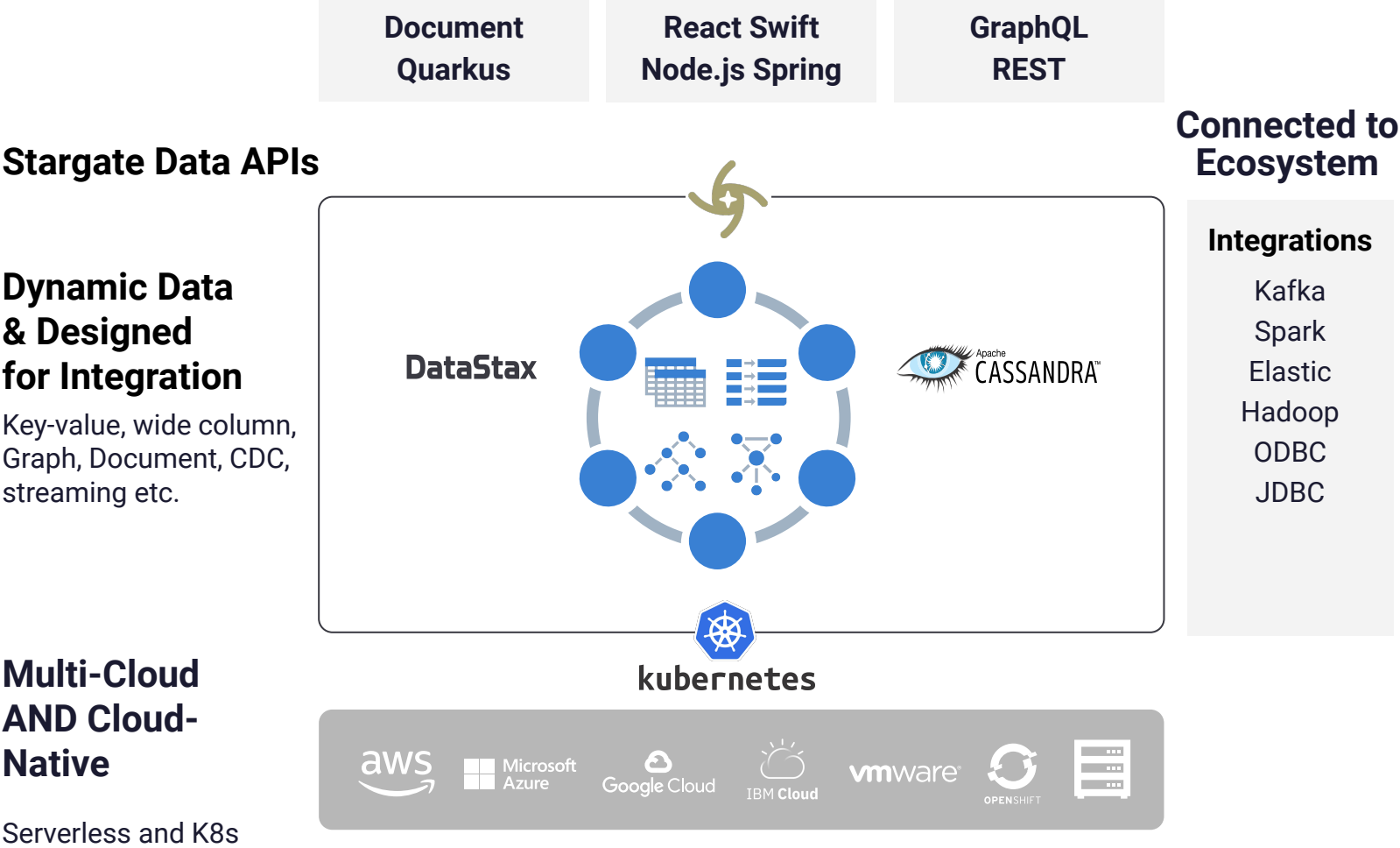
Services Packages



Apache Cassandra 4.0

CEPs on secondary indexes, and more

# The Open Data Stack



Give developers **modern APIs** for data products and innovation



Give operators **single control plane**



Give CIOs **3-5X TCO savings**



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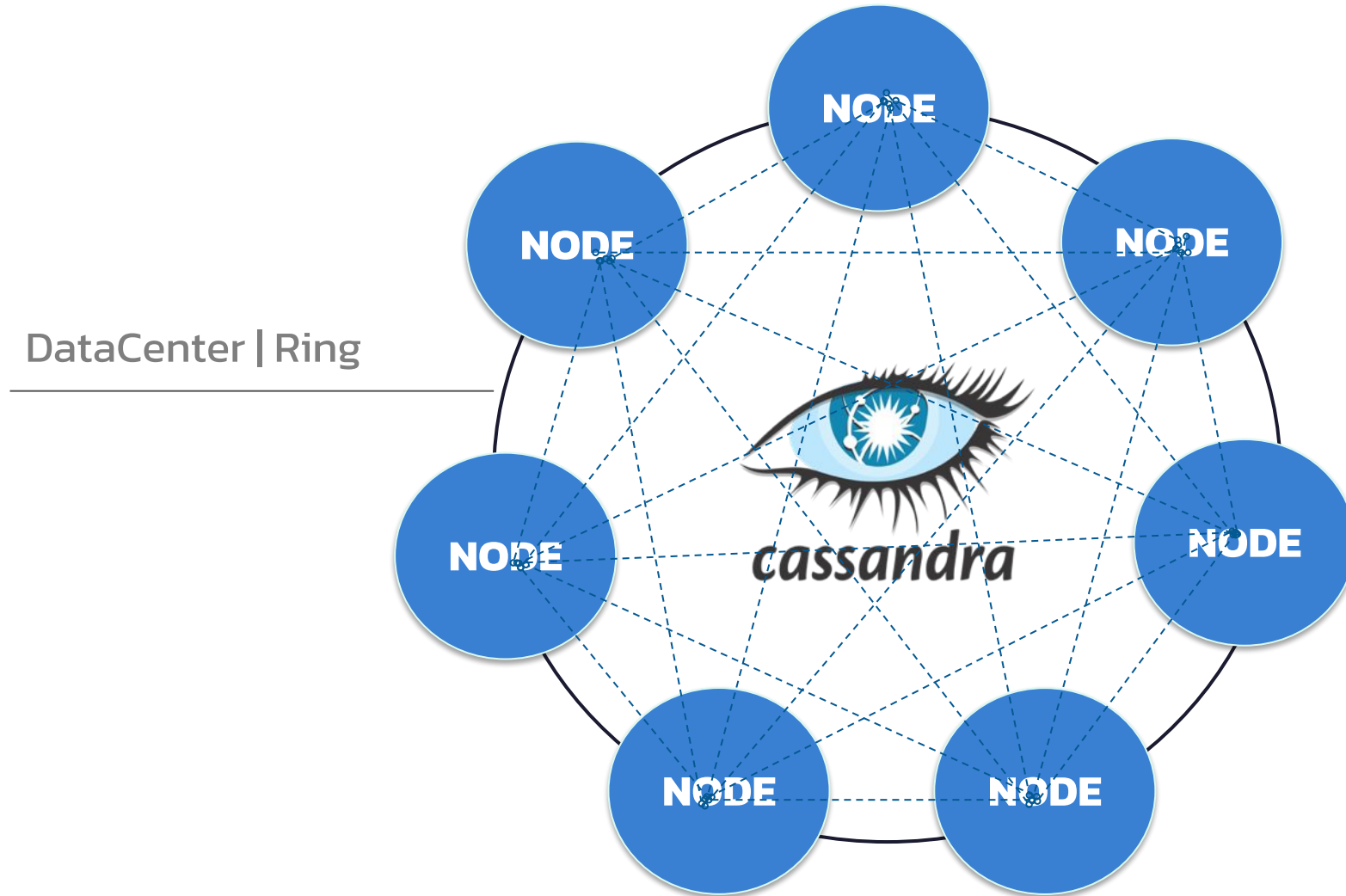
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# Apache Cassandra™ = NoSQL Distributed Database



# Apache Cassandra™ = NoSQL Distributed Database



- Big Data Ready
- Highest Availability
- Geographical Distribution
- Read/Write Performance
- Vendor Independent

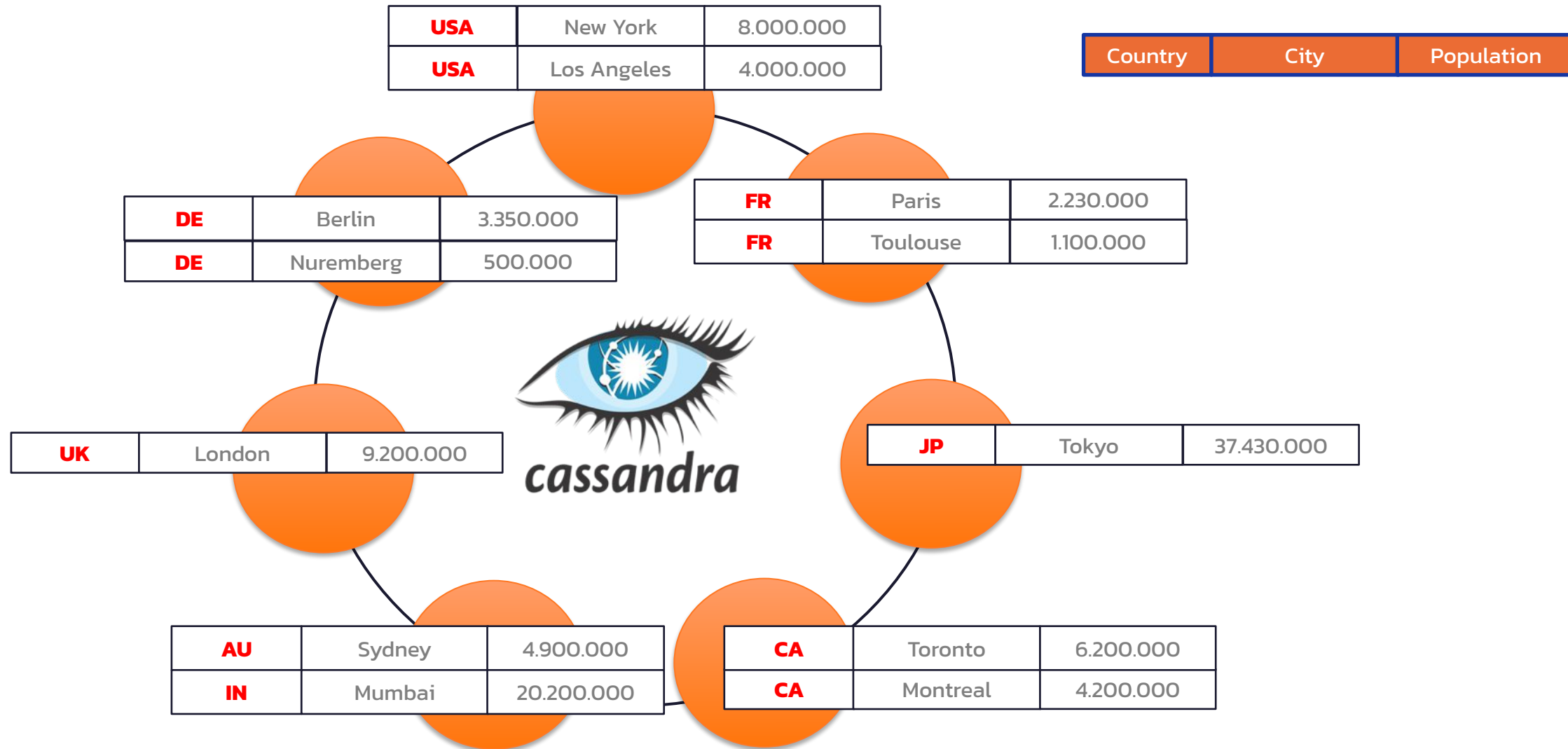
# Data is Distributed



Country	City	Population
USA	New York	8.000.000
USA	Los Angeles	4.000.000
FR	Paris	2.230.000
DE	Berlin	3.350.000
UK	London	9.200.000
AU	Sydney	4.900.000
DE	Nuremberg	500.000
CA	Toronto	6.200.000
CA	Montreal	4.200.000
FR	Toulouse	1.100.000
JP	Tokyo	37.430.000
IN	Mumbai	20.200.000

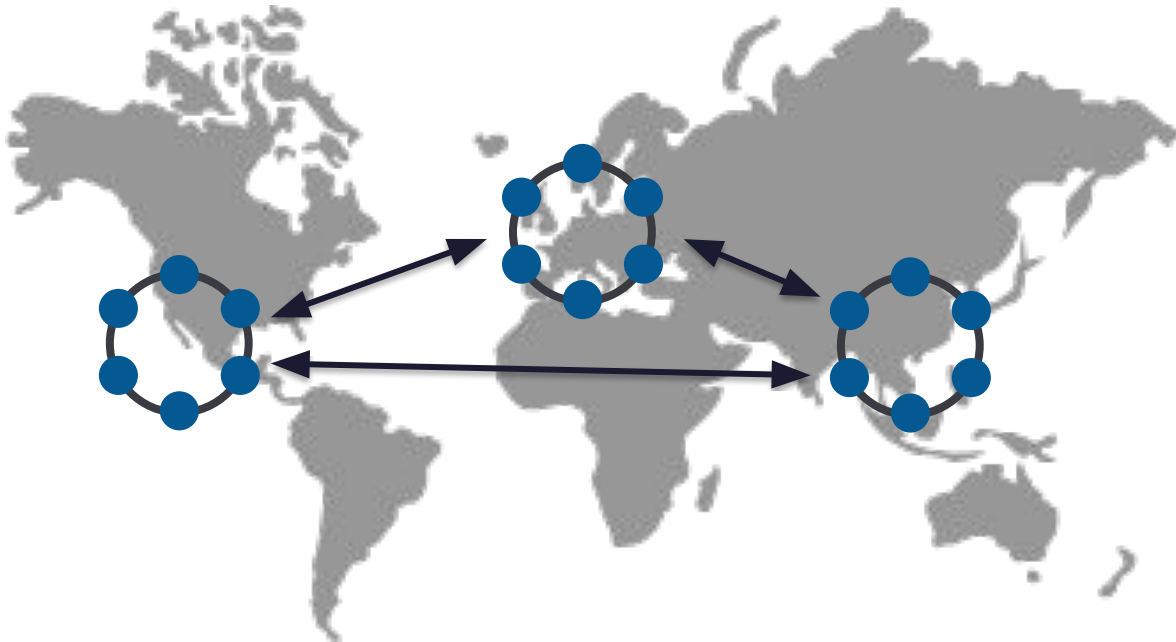
Partition Key

# Data is Distributed

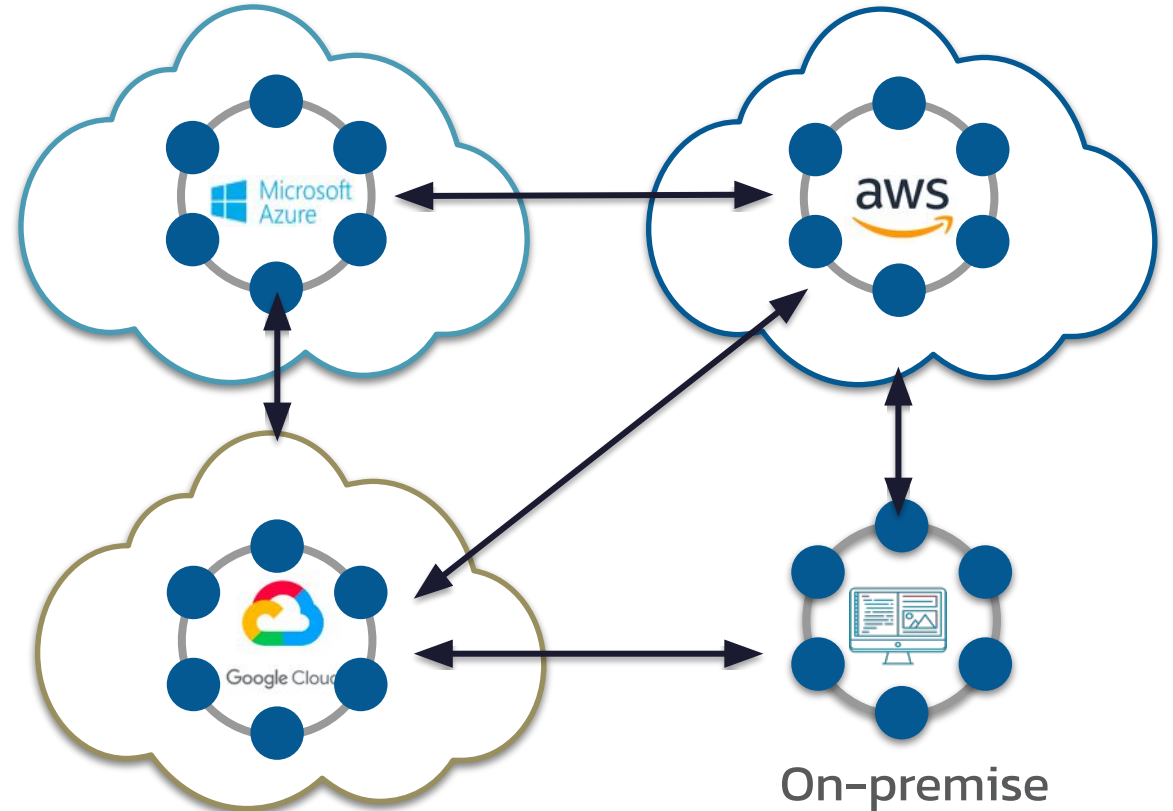


# Data Distributed Everywhere

- Geographic Distribution



- Hybrid-Cloud and Multi-Cloud



# Understanding Use Cases

## Scalability

High Throughput
High Volume



Heavy Writes
Heavy Reads



Event Streaming	Log Analytics
Internet of Things	Other Time Series

## Availability

Mission-Critical
------------------



No Data Loss
Always-on



Caching	Pricing
Market Data	Inventory

## Distributed

Global Presence
Workload Mobility



Compliance / GDPR
----------------------



Banking	Retail
Tracking / Logistics	Customer Experience

## Cloud-native

Modern Cloud Applications
------------------------------



API Layer	Hybrid-cloud
Enterprise Data Layer	Multi-cloud

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# Unlock your data with Stargate APIS

1. Why a Data Gateway ?
2. Stargate Overview
3. Using Document API





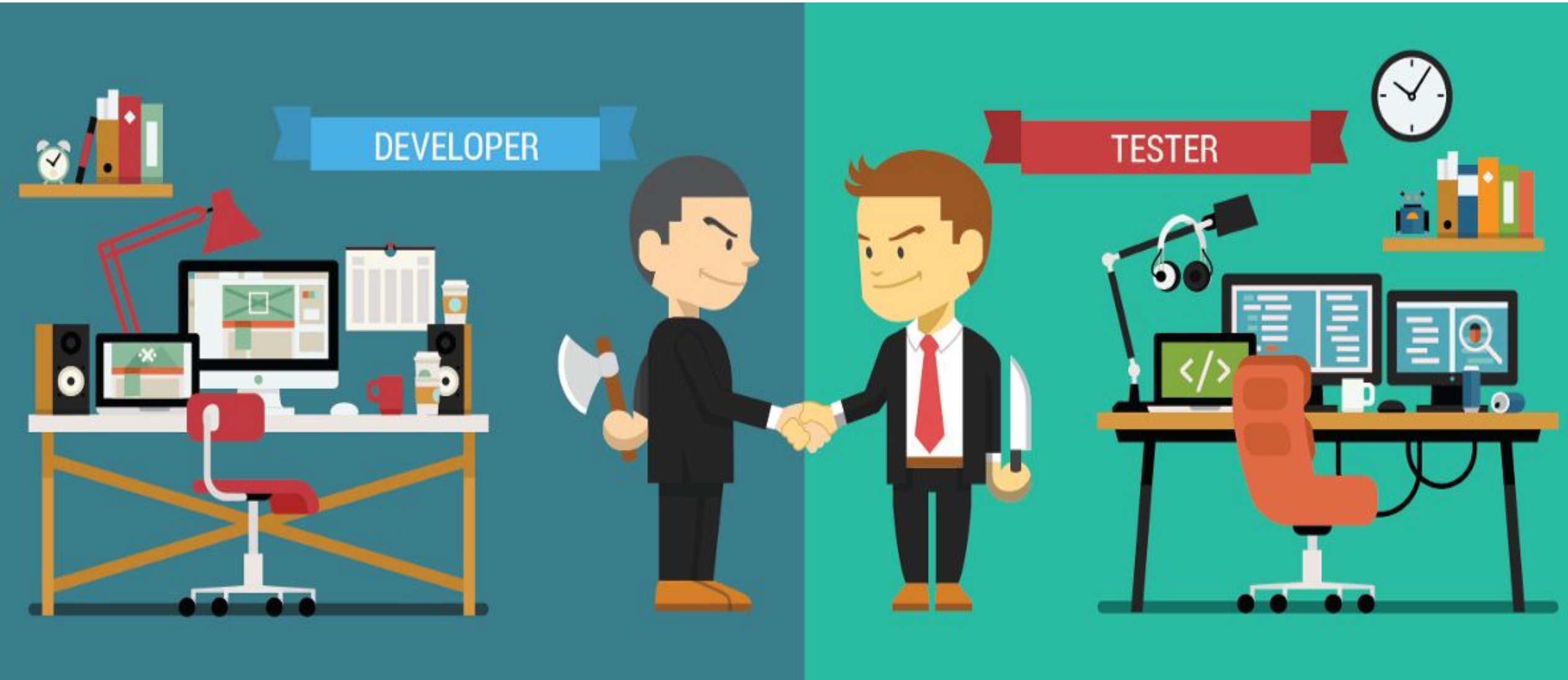
# Start with Why

- **Developers**
  - Do you like learning query languages (CQL, N1QL, GQL, cypher, gremlin....)
    - **No.** Save my JSON, give it to me back when I need it
    - ORM / Spring Data are so popular nowadays
  - Do you care about how your data is stored ?
    - Physical data model part of the interface...yikes
    - Create structures based on queries
  - Do you like installing and running Databases locally
    - especially distributed databases
    - especially with datasets and integration tests

# Start with Why

- **Operators and Databases Administrators...**
  - Do you allow developers to execute direct queries against your DB ?
  - Do you like opening port ranges like 0-65536 to allow communications with applications, especially in the cloud.
  - Do you like creating dedicated projects and hiring people just to create APIs to expose an existing treatment (digital transformation FTW)

## And when those 2 meet each other



# The Modern Data Stack Starts With a Modern Data Gateway



## Modern Developers Need Schemaless Data

Data modelling is too complicated  
Document databases have seen their growth skyrocket - 82% versus Cassandra at 17%



## Modern Apps Need Modern Data APIs

New languages and frameworks - Javascript, React, Full-Stack - are built on REST and GraphQL

63% of developers building or using REST APIs, GraphQL usage has doubled every year for the last 5 years



## Modern Architecture Need Microservices

K8S Cloud Native architectures connect systems and data via high-performance microservices

42% percentage y/y growth of enterprises using microservice architecture and cloud native

73% y/y growth of developers skilling up in k8s

# Unlock your data with Stargate APIS

1. Why a Data Gateway ?
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# Stargate Overview

## An open source API framework for data

Stargate makes it easy to use a database for any application workload by adding plugin support for new APIs, data types, and access methods

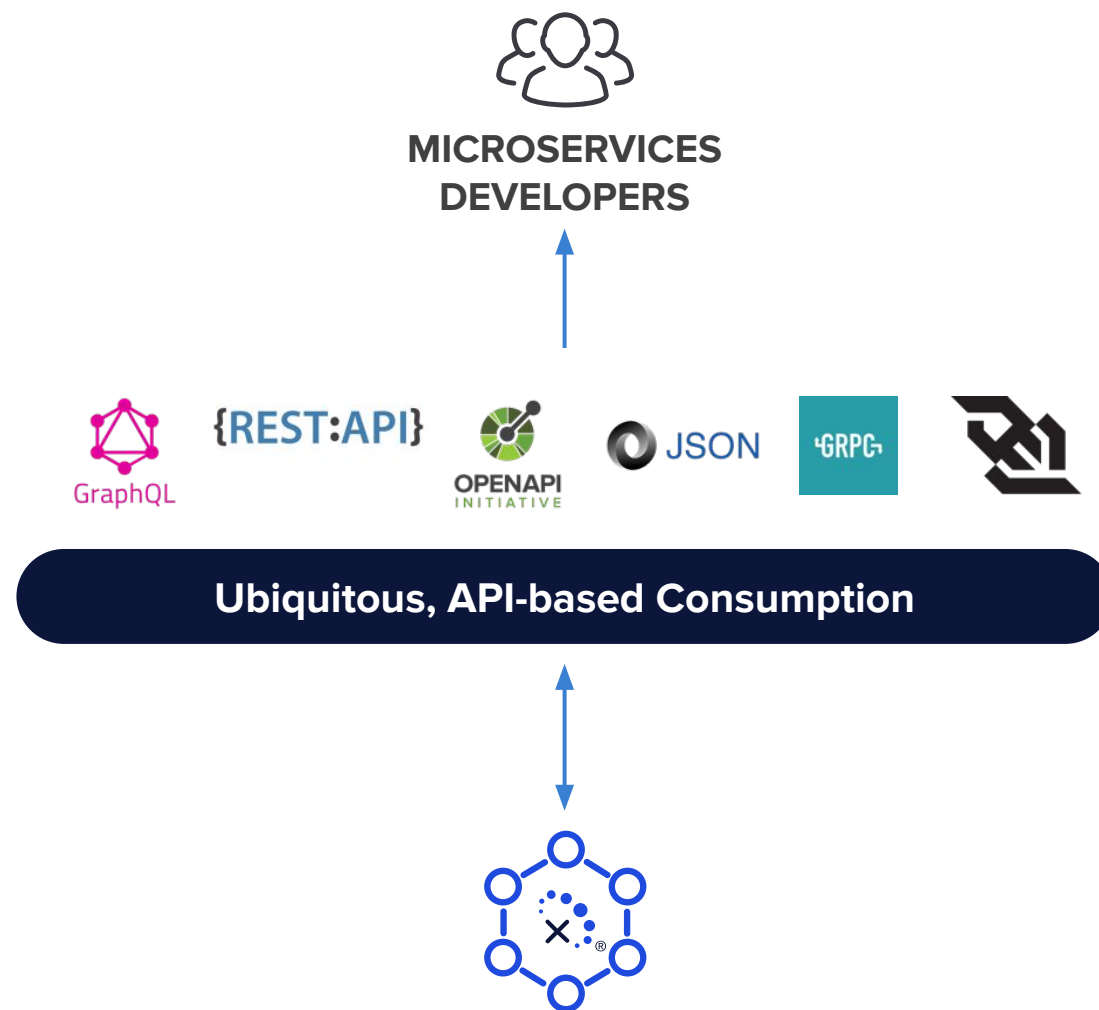


# Data Gateway Rational

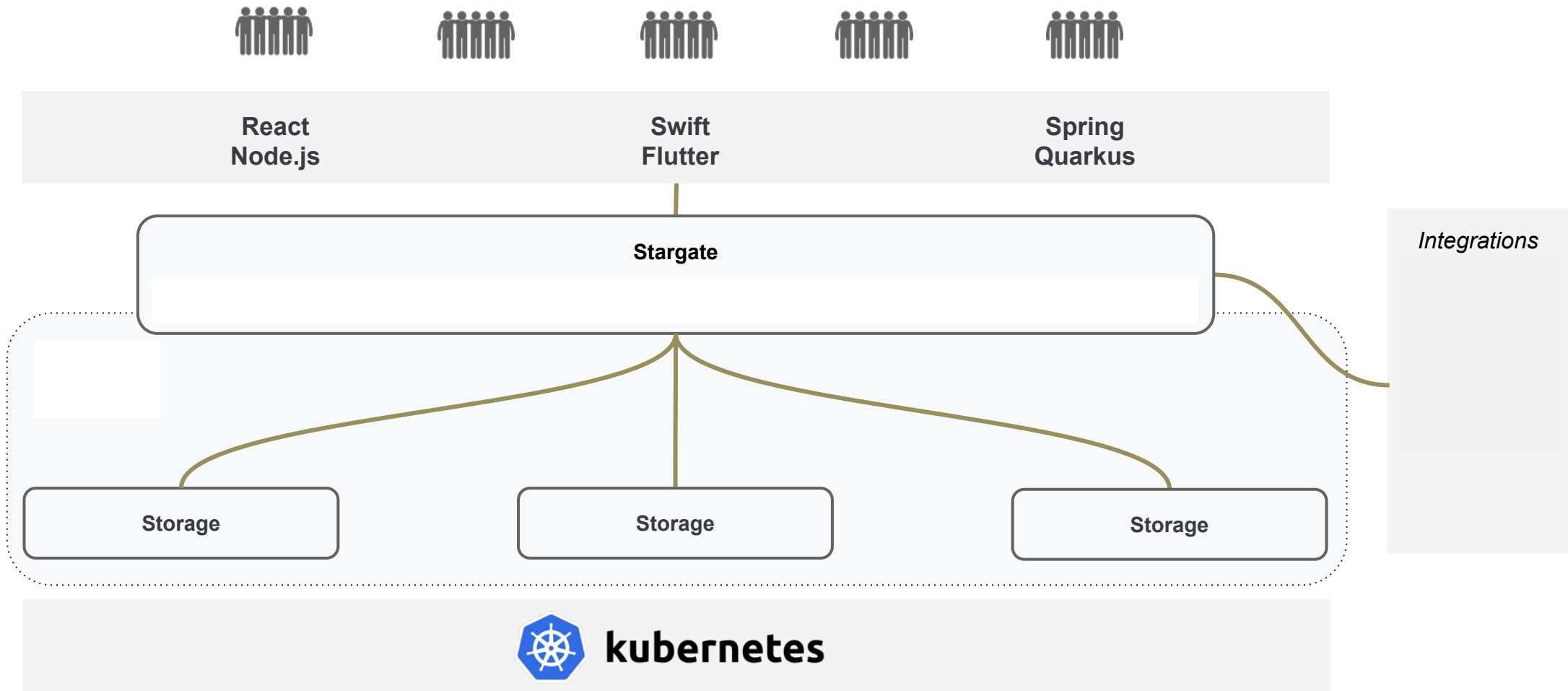


Developers want the option to use modern APIs and development gateways.

Cassandra is a database designed for the new standard and the associated APIs that facilitate the first choice of developers.



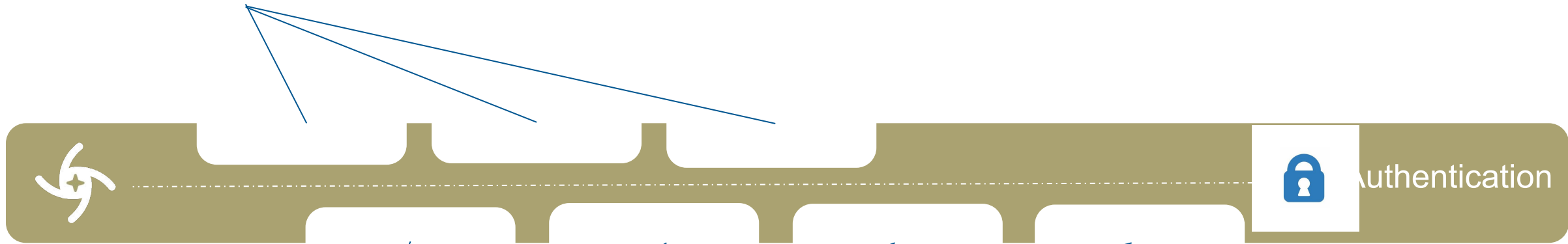
# Logical Architecture, Yet another Proxy



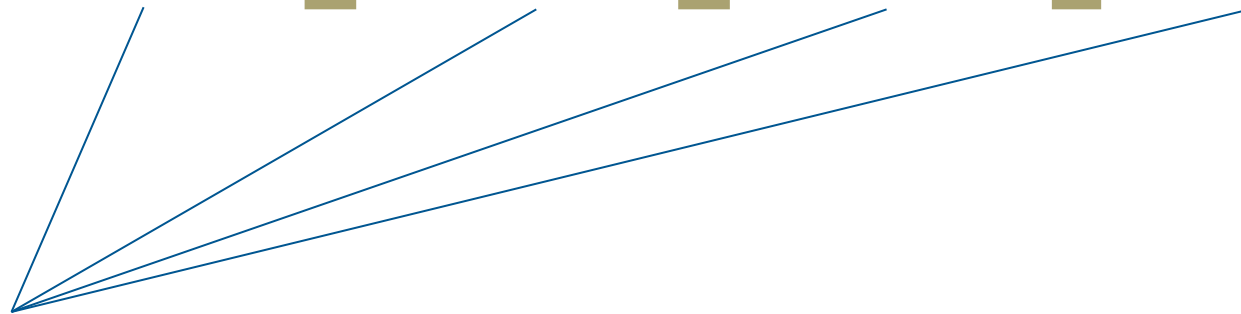


# API Extension and Persistence Extensions

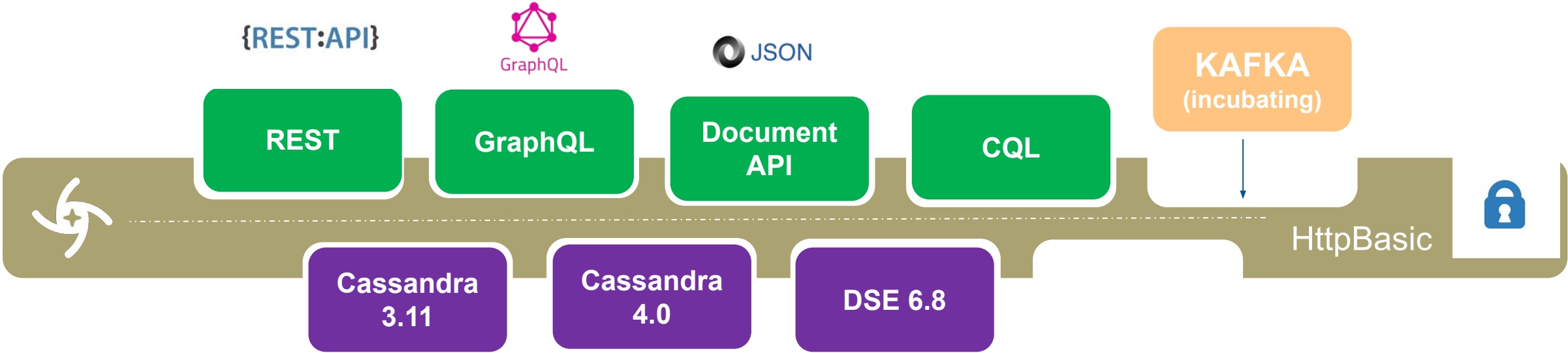
API EXTENTIONS

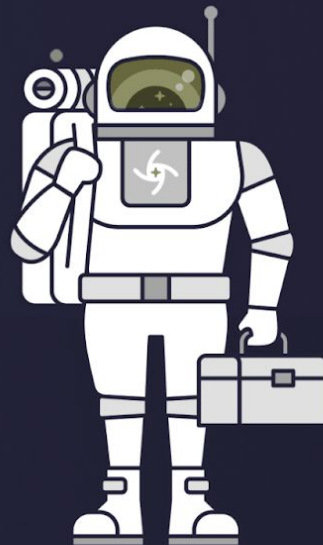


PERSISTENCE  
EXTENTIONS



# Modules



[Docs](#)[Community](#)[Blog](#)

## OPEN SOURCE DATA GATEWAY

Stargate is an open source data gateway that sits between your app and your databases. Stargate brings together an API platform and data request coordination code into one OSS project.

[Get Started](#)[Github](#)

Stargate is the official data API for DataStax Astra and DataStax Enterprise!

[Try It Now](#)

# Unlock your data with Stargate APIS

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# Cassandra as a Multi-Models NoSql Database



## Column Oriented

- Cassandra is contains **Tables** with a Partition key
- Defined as Column Oriented ( you can add columns)



## Key-Value

- This is like KEY and multiple values, fit the key-value pattern



## TimeSeries DataBase

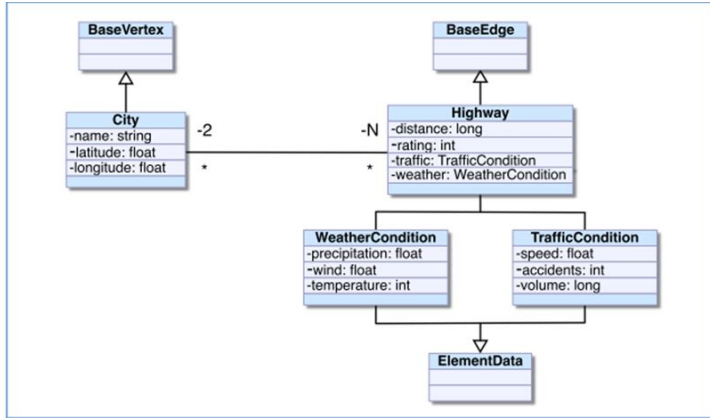
- Cassandra fits time series use cases (high throughput) and data models (CL)
- Provide: TTL, aggregation through Spark, split OLTP and OLAP

- **Graph DataBase**

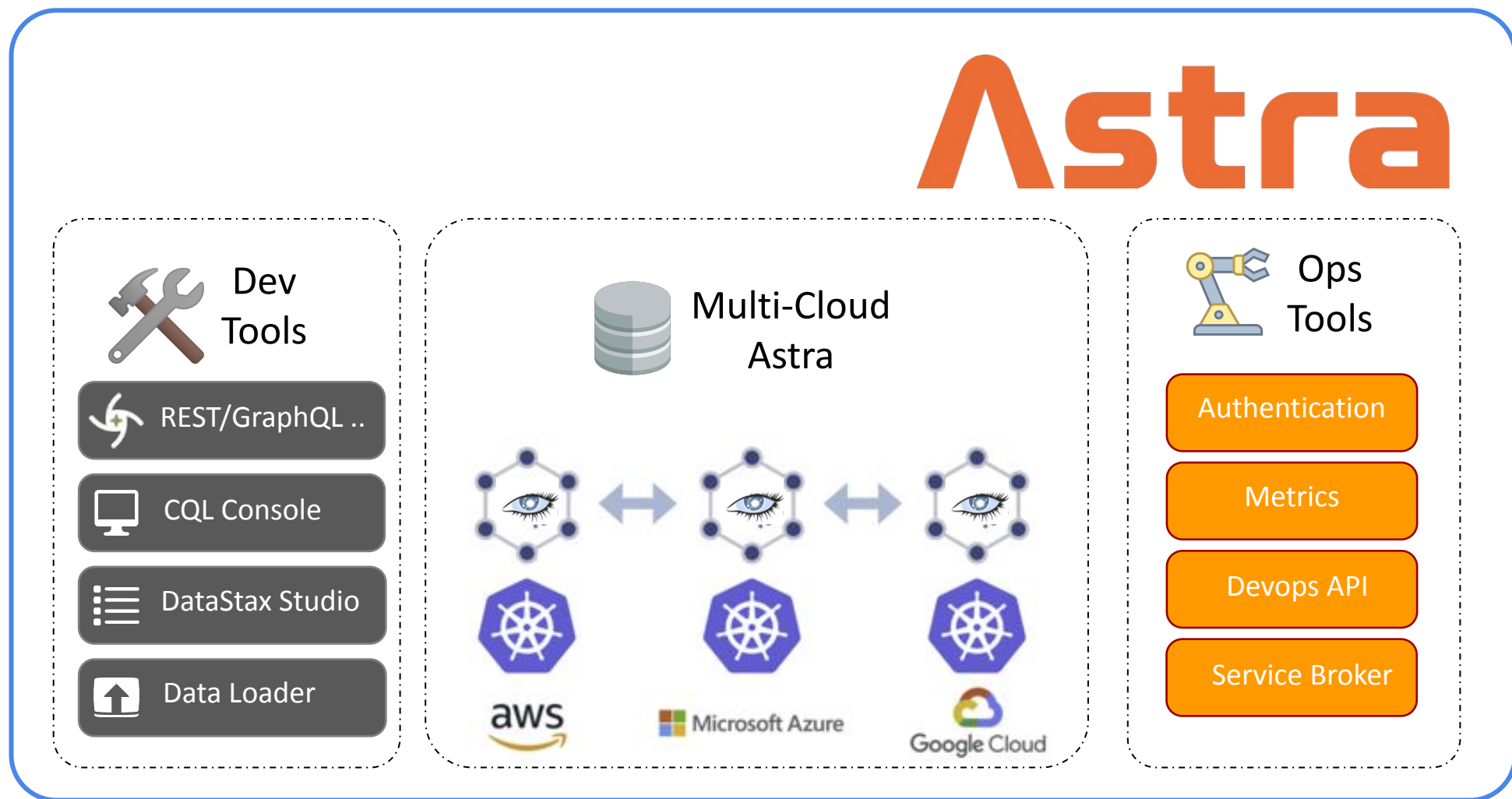
- For 5 years Datastax has been implemented a graph Engine, fork of TitanDB on top of Cassandra storage, querin with **gremlin**.

# Cassandra as Document Store, the last frontier

- Cassandra already handles JSON and structures
  - INSERT JSON, SELECT JSON
  - Set<>, List<>, Map<>, and User Defined type (UDT) even nested
  - BUT everything is strongly coupled with a **SCHEMA**



# OSS Stargate is Embedded in Astra



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# How Might you Use This ?



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# Thank You



**DataStax Developers**