



# CouchBase und Openshift

*Massive Skalierung für die noSQL Datenbank*

Bruno Simic, Solution Architect CouchBase

Norbert Steiner, Solution Manager Computacenter



# Agenda



Skalierbarkeit

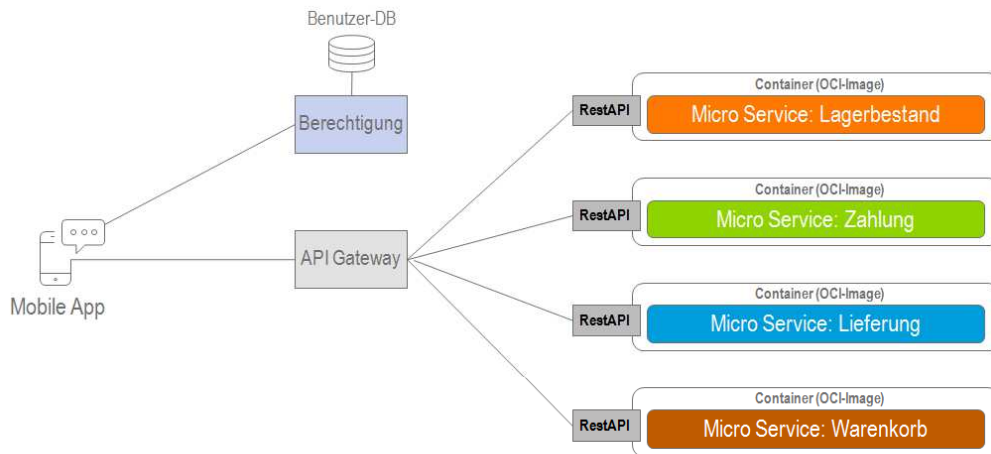
Die Rolle des DBA

CouchBase

Openshift & Operator



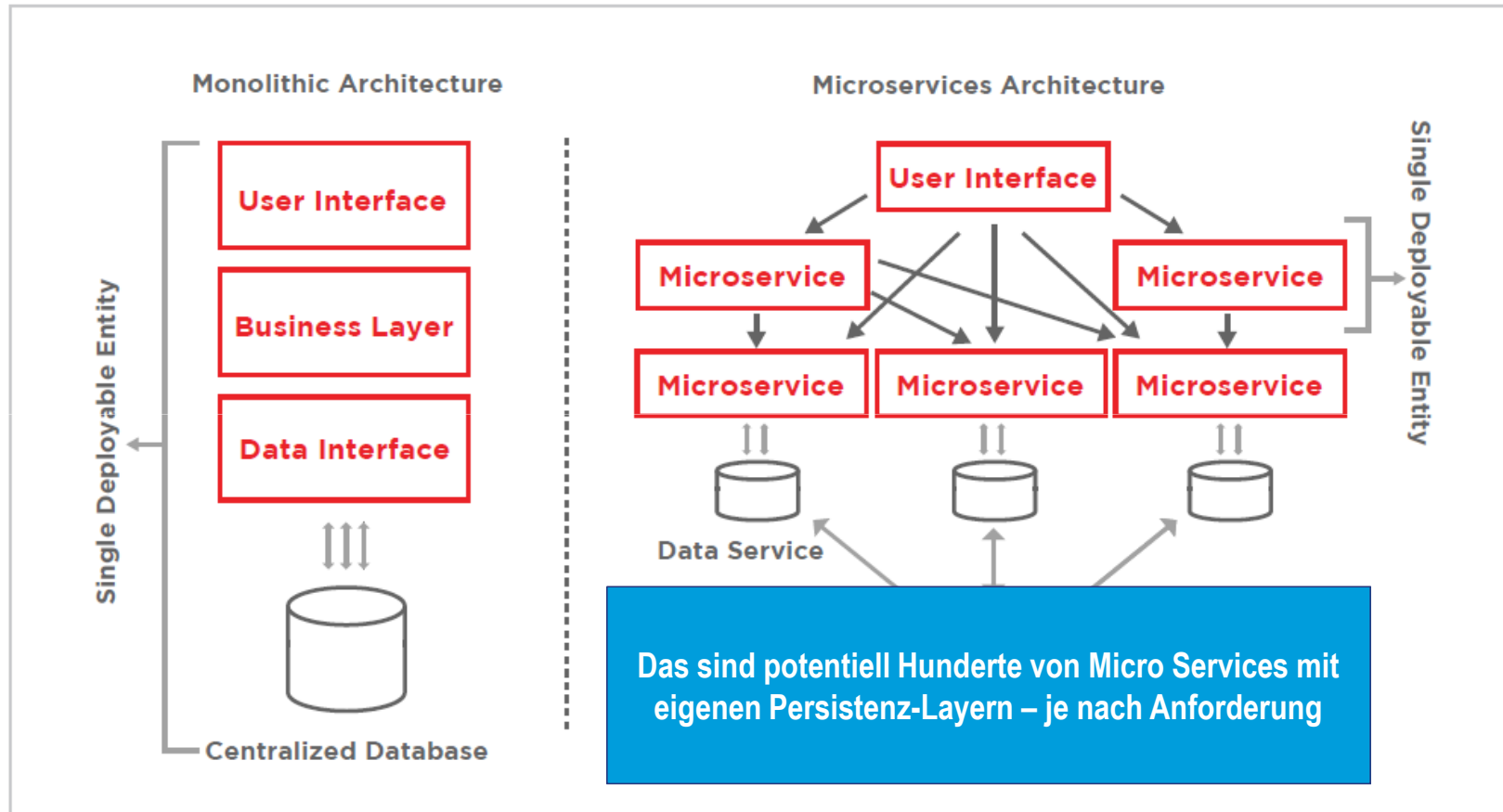
# Skalierbarkeit: Micro Service



Microservice-Architekturen - und Kultur:  
*A better definition [for Microservices] could have been micro and autonomous teams, putting the emphasis on the organizational aspects (Quelle: Raffaele Spazzoli )*



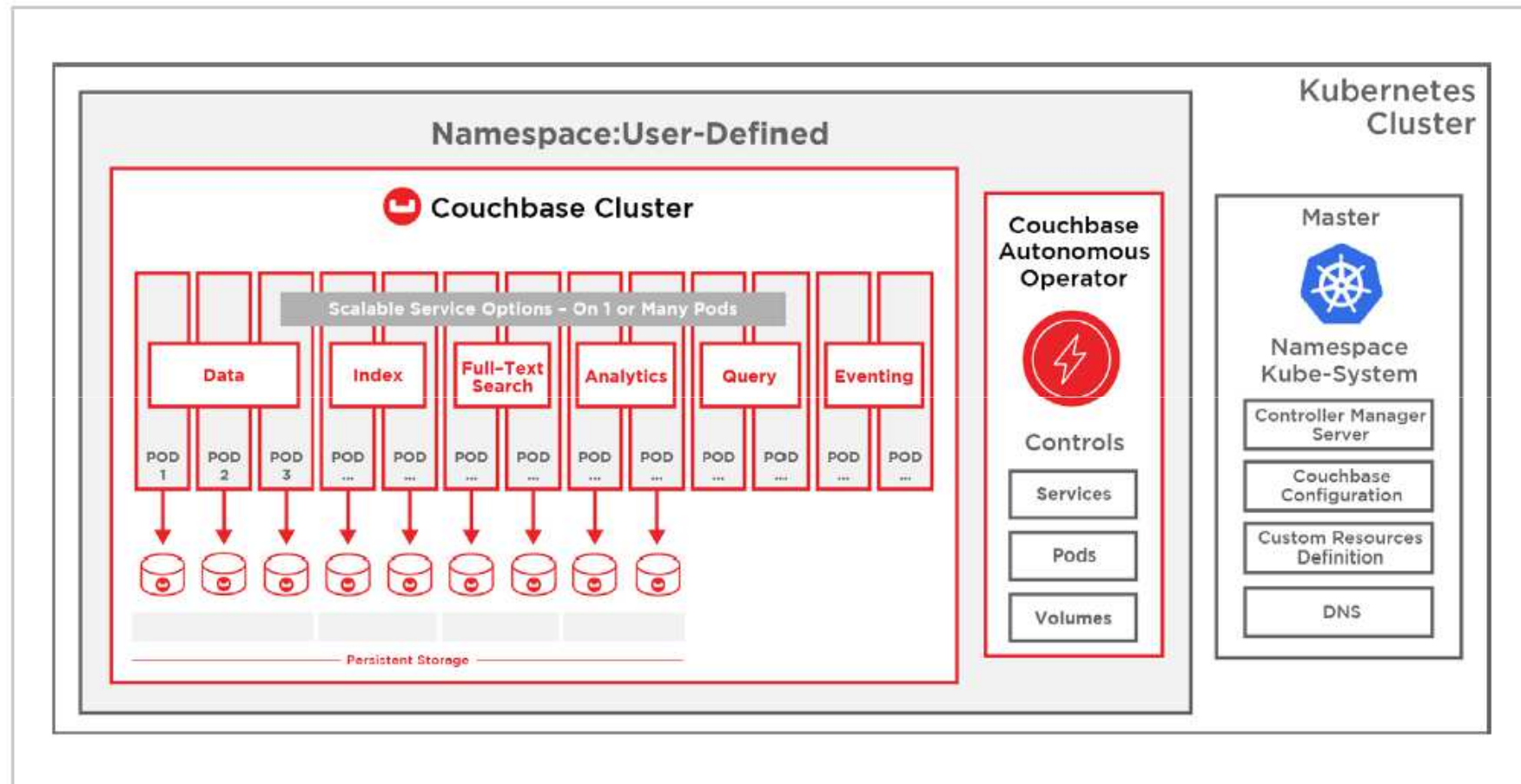
# Skalierbarkeit: Micro Service verantworten Ihre Persistenz



Quelle: Anil Kumar, CouchBase



# Die Rolle des DBA: DB Operations-by-Code

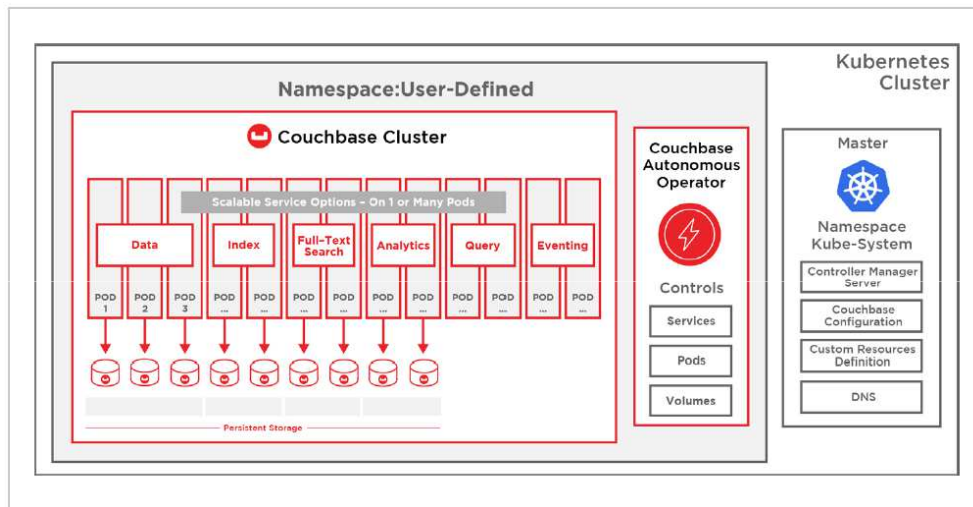


Quelle: Anil Kumar, CouchBase





# Die Rolle des DBA: DB Operations-by-Code



Quelle: Anil Kumar, CouchBase

Für eine Übersicht verfügbarer Operator siehe auch:  
<https://github.com/operator-framework/awesome-operators>

- Der Hersteller liefert den Autonomen Operator – die Betriebsanleitung für die Applikation inklusive deren Persistenz

- Der Operator kümmert sich um

- Einhalten des Desired State
- Recovery bei Störungen
- Disaster Recovery (Rack/Zone Awareness)
- Release- und Patch Management
- Datensicherung
- Monitoring & Verbrauchsstatistiken
- Sicherheit (RBAC Konfigurationen)

Hinweis: Die genaue Funktionalität ist abhängig von dem jeweiligen Operator und dessen Funktionsumfang.

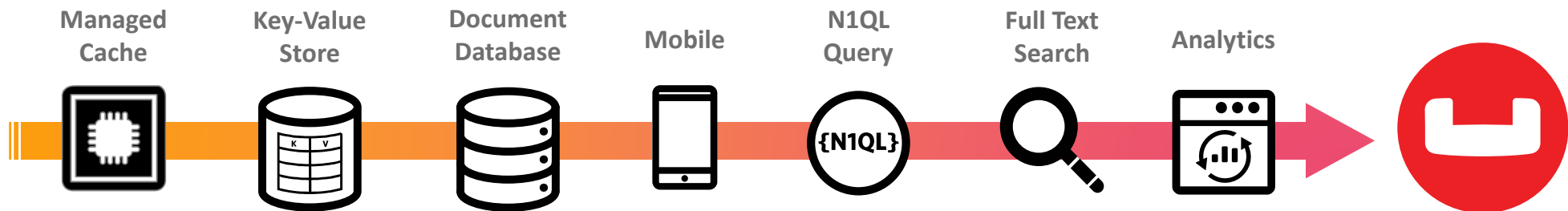


# Core Principles Of Couchbase Platform

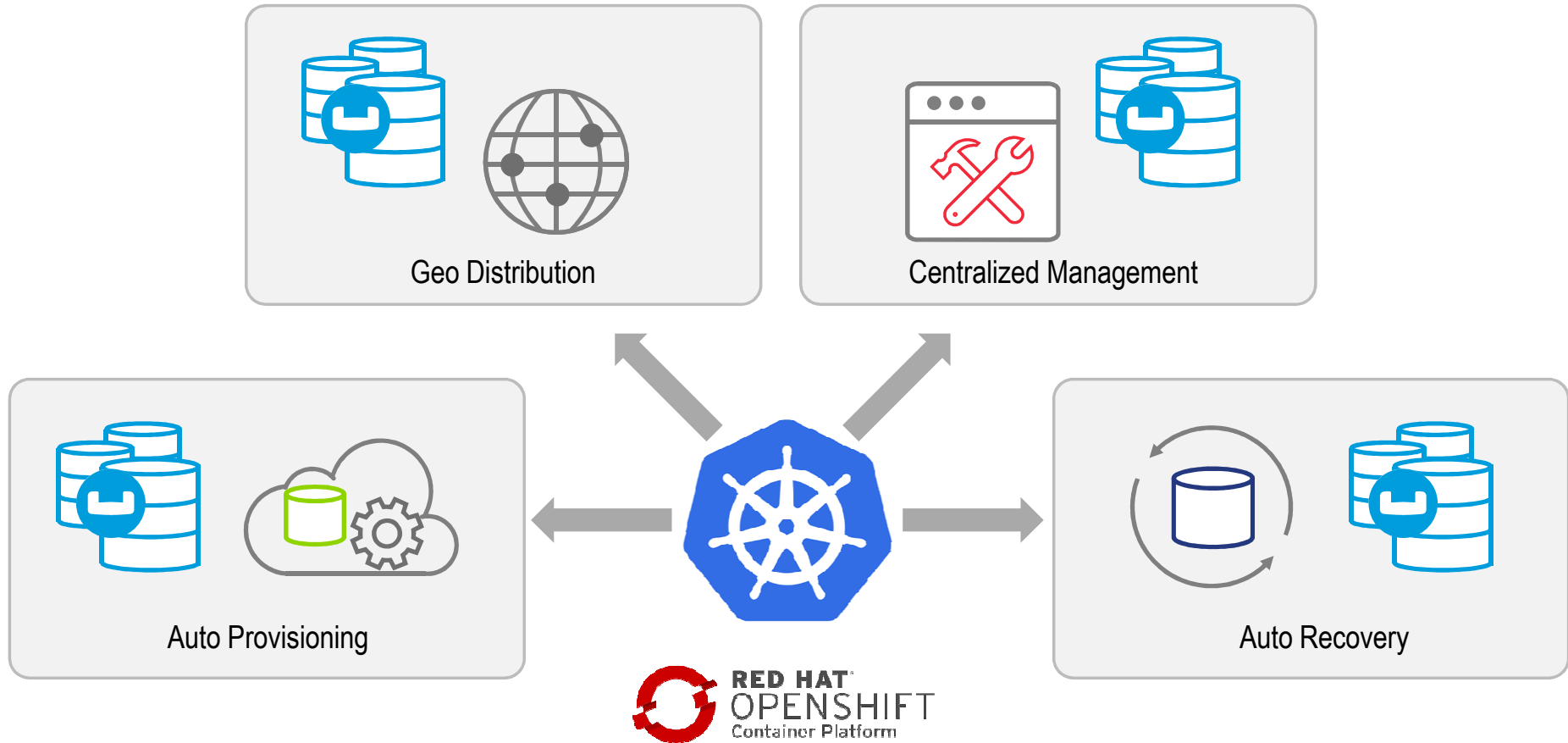


## Our Evolution Principles:

- Memory-first Architecture
- True auto sharding
- Asynchronous approach to everything
- JSON-based flexible data model
- Scale workloads independently

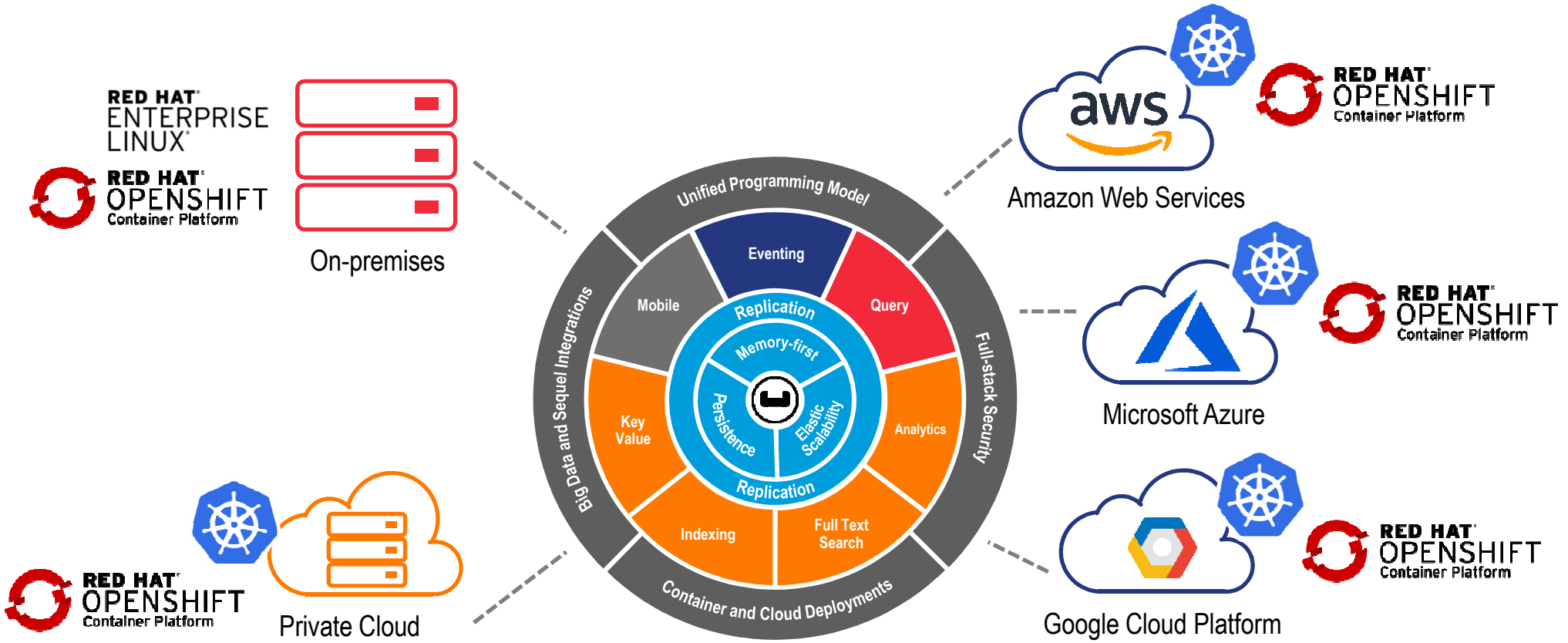


# Couchbase - Designed For Containerized Applications





# Couchbase and OpenShift



# Customer Spotlight



## amadeus



## LinkedIn

## PayPal

1.1 trillion hits a day  
75% of flight bookings worldwide are made through Amadeus

1 billion+ user profiles  
7 DCs, 740 nodes  
300K reads, 20K writes/sec

2821 nodes, 100+ clusters  
16M entries every 5 min  
2.5 million ops/sec. on a single cluster

1 billion+ documents  
10TB+ data  
< 200ms response time

### E-Commerce

### Travel

### Gaming

### Communications



### Financial Services

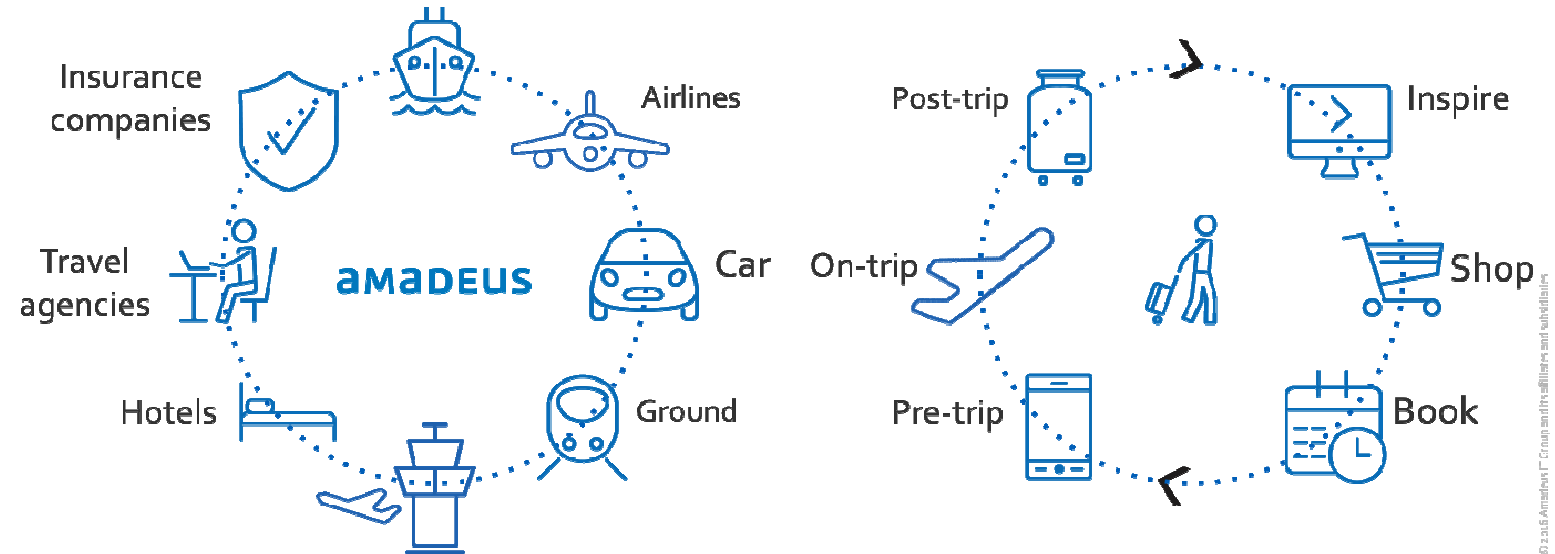
### Digital Health

### Digital Media

### Industrial IoT



# Couchbase Use Case - Amadeus



## Database Requirements

- High performance and low response times for document creation, queries, & updates
- 145K queries per second on average
- 1.6b+ business processes each day
- Resilient to failure

## Application Features

- Inventory and reservations
- Worldwide & concurrent updates
- Used by airlines, hotels, travel agencies, booking portals, ...



# Couchbase Use Case - Apple



## Database Requirements

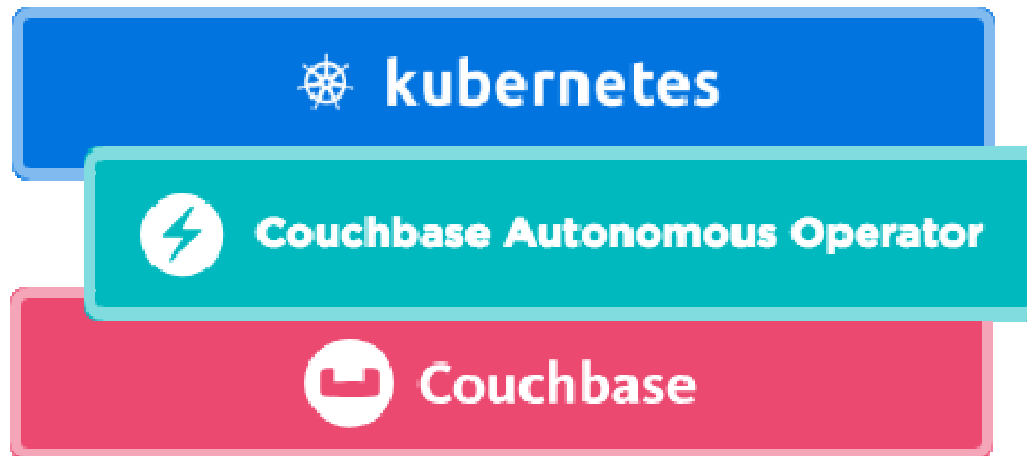
- Low-latency access to evolving user data
- Support for many concurrent users
- Near 100% high availability & disaster recovery

## Application Features

- Aggregate and gather insights from heterogeneous data such as user profiles, transactions, events, locations, time
- Enable marketing analytics tools with interactive queries
- Power reporting dashboards with real-time updates



# Couchbase Autonomous Operator

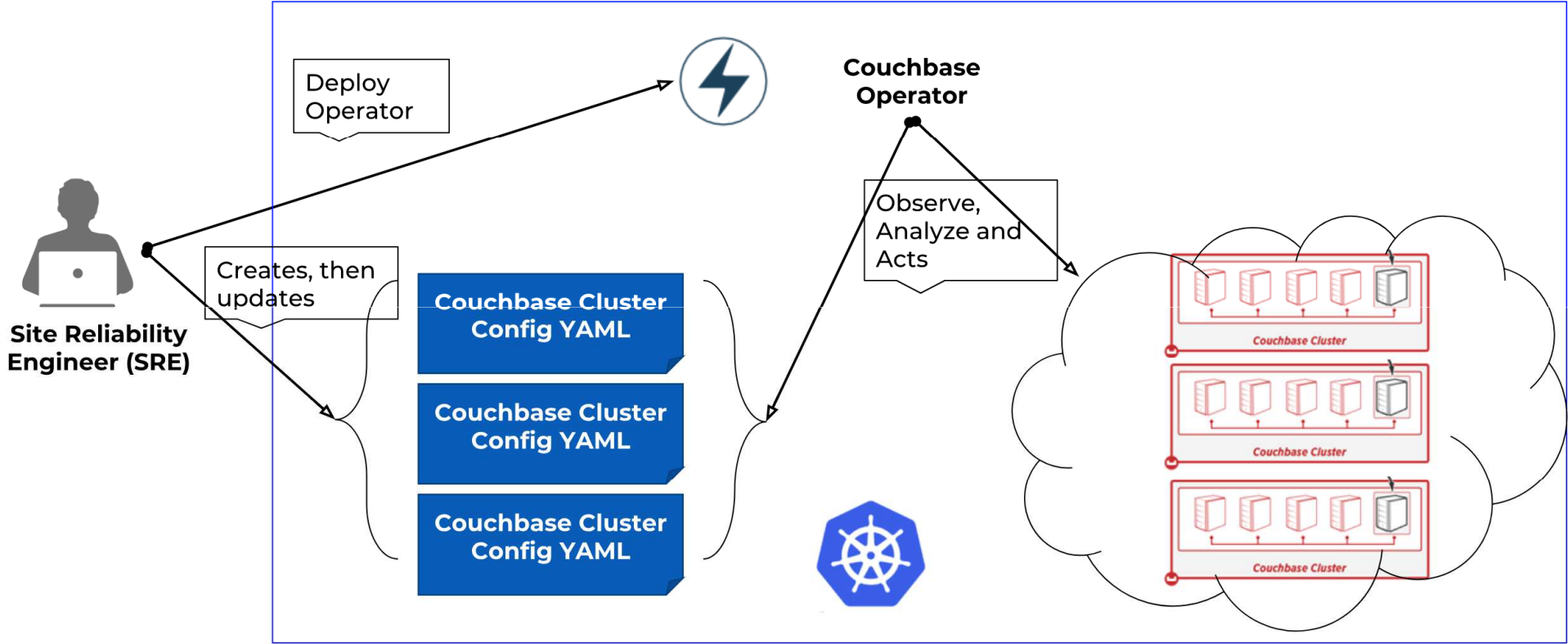


Couchbase Autonomous Operator is an application-specific controller that extends the Kubernetes API to create, configure and manage instances of complex stateful applications on behalf of a Kubernetes user.

It builds upon the basic Kubernetes resource and controller concepts, but also includes domain or application-specific knowledge to automate common tasks better managed by computers.



# Couchbase Autonomous Operator - Architecture







```
1 apiVersion: couchbase.database.couchbase.com/v1beta1
2 kind: CouchbaseCluster
3 metadata:
4   name: cb-example
5 spec:
6   baseImage: couchbase/server
7   version: enterprise-5.0.1
8   authSecret: cb-example-auth
9   exposeAdminConsole: true
10  cluster:
11    dataServiceMemoryQuota: 256
12    indexServiceMemoryQuota: 256
13    searchServiceMemoryQuota: 256
14    indexStorageSetting: memory_optimized
15    autoFailoverTimeout: 30
16  buckets:
17    - name: default
18      type: couchbase
19      memoryQuota: 128
20      replicas: 1
21      ioPriority: high
22      evictionPolicy: fullEviction
23      conflictResolution: seqno
24      enableFlush: true
25      enableIndexReplica: false
26  servers:
27    - size: 1
28      name: all_services
29      services:
30        - data
31        - index
32        - query
33        - search
34      dataPath: /opt/couchbase/var/lib/couchbase/data
35      indexPath: /opt/couchbase/var/lib/couchbase/data
```

Naming

Image to use

Size

How many



OpenShift Web Console - Mozilla Firefox

OpenShift Web Console Couchbase Console Enter

https://ice-oscp.demolab.local:8443/console/project/couchbas

OPENSIFT CONTAINER PLATFORM

Chris Millstead

couchbase-operator

Search Catalog Add to Project

### Pods [Learn More](#)

Filter by label Add

Name	Status	Containers Ready	Container Restarts	Age
<a href="#">cb-example-0002</a>	Running	1/1	0	25 minutes
<a href="#">cb-example-0001</a>	Running	1/1	0	26 minutes
<a href="#">cb-example-0000</a>	Running	1/1	0	27 minutes
<a href="#">couchbase-operator-7f689bdbfc-v7nrc</a>	Running	1/1	0	a day



# VIELEN DANK

