Applications stateful et multi-cloud avec le Couchbase Operator pour Kubernetes et Red Hat OpenShift

Arduino CASCELLA - Solutions Engineer

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1 CONTAINER TRANSFORMATION

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Containers Transform

Monolith

N-Tier

Microservices

Applications

Datacenter

Hosted

Hybrid

Infrastructures

Waterfall

Agile

DevOps

Processes

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Why Not Databases in Containers?

3 major obstacles for DB containerisation:

1. How to shard data among containers?
2. How to avoid data corruption if multiple writes in different pods?
3. How to ensure high availability, backup policies, restore?

Only state is not enough!

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2 COUCHBASE: THE CONTAINER DATA PLATFORM

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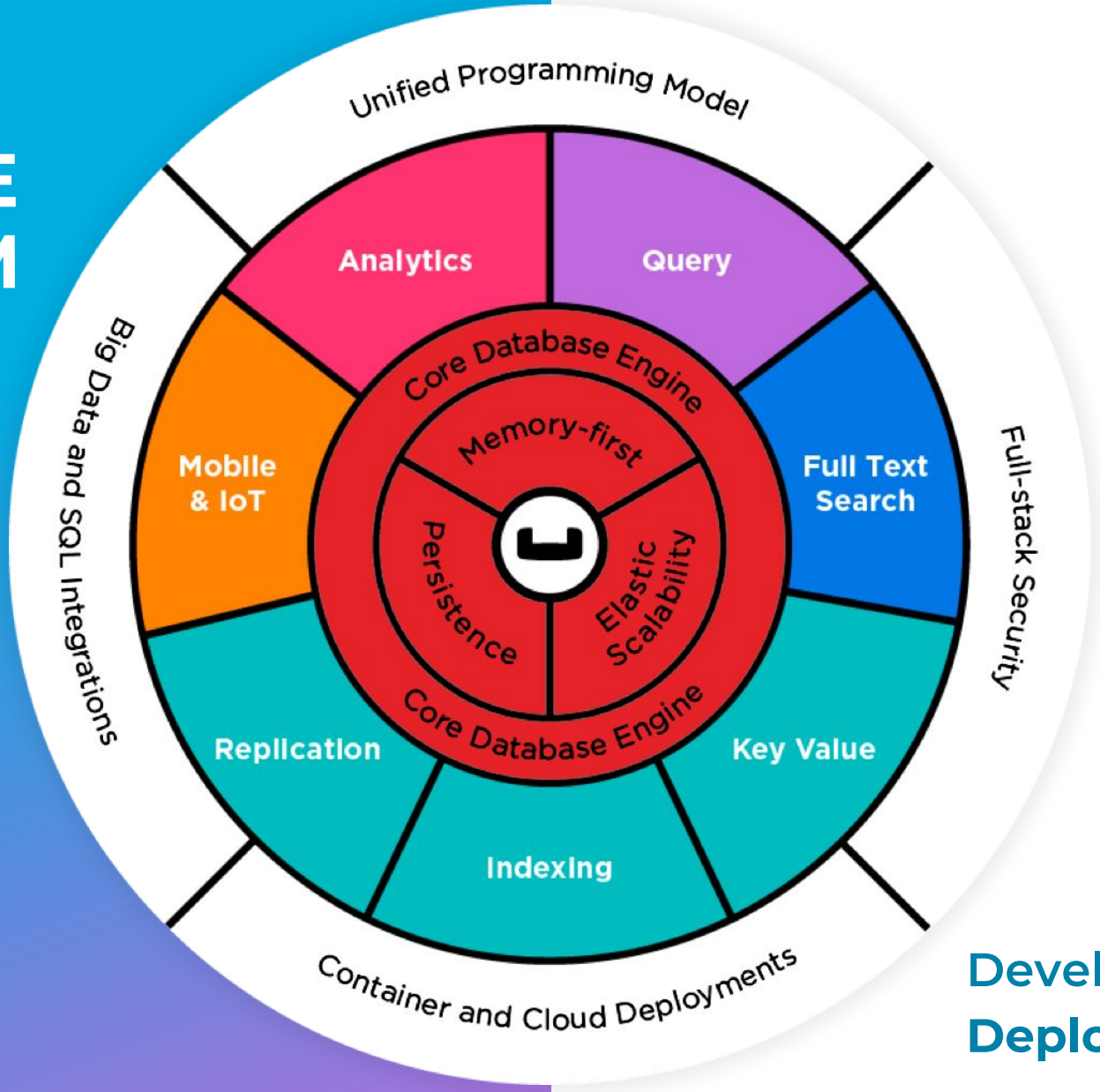
THE COUCHBASE DATA PLATFORM



Develop with agility.
Deploy at any scale.

Customers across every industry embracing digital

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

GANNETT

50M unique
monthly visitors
2.5B monthly page views
Replaced MongoDB

LinkedIn

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

PayPal

1 billion+ documents
10TB+ data
Sub-2ooms
response time

E-Commerce

Walmart
cars.com
FANATICS
Office DEPOT OfficeMax
STAPLES
TESCO
QVC
BEST BUY

Travel

MARRIOTT
AMADEUS
Sabre
ORBITZ
tripadvisor
skyscanner

Gaming

EA
betfair
zynga
BLIZZARD ENTERTAINMENT
Pokémon GO
Playtika
SGN

Communications

COMCAST
verizon
KDDI
at&t
Viber
Telefónica

Financial Services

ADP
FICO
CONCUR
PayPal
WELLS FARGO
VISA

Digital Health

WebMD
everyday HEALTH
BD
Cochlear
MONSENSO

Digital Media

sky
THOMSON REUTERS
FANDANGO
GANNETT
McGraw Hill
Disney
nielsen

Industrial IoT

SUEZ
Numerex
CHAMBERLAIN
GE

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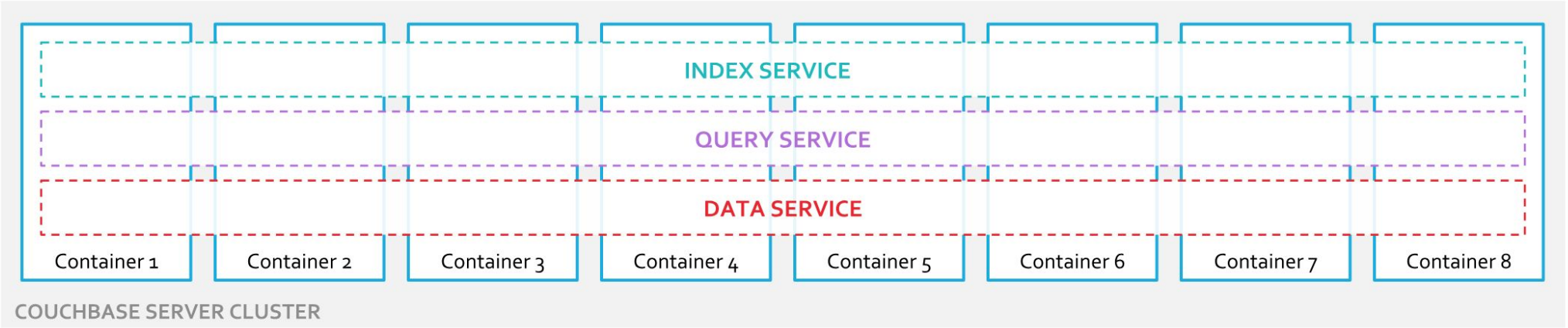
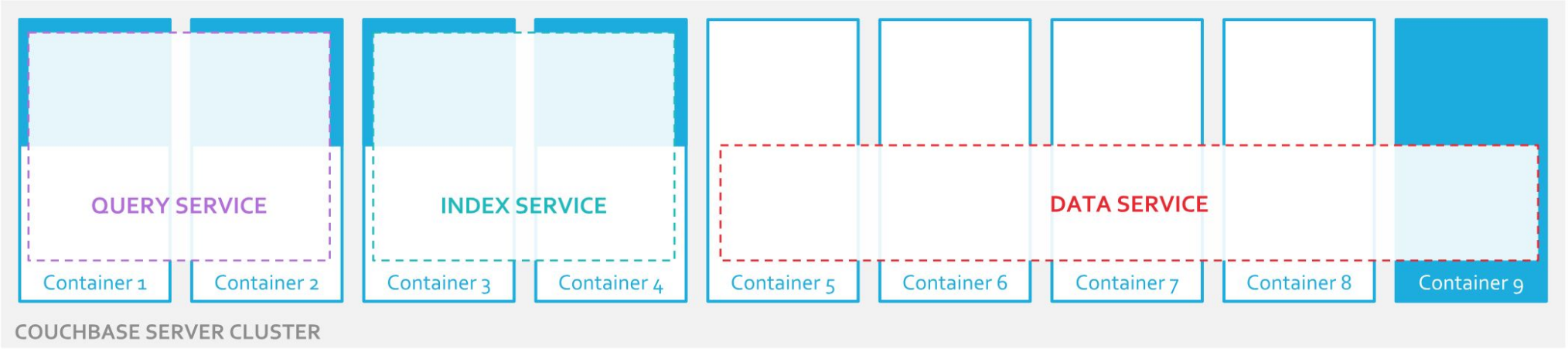
Couchbase designed for containerized applications

Microservice Architecture == Multi-Dimensional Scaling





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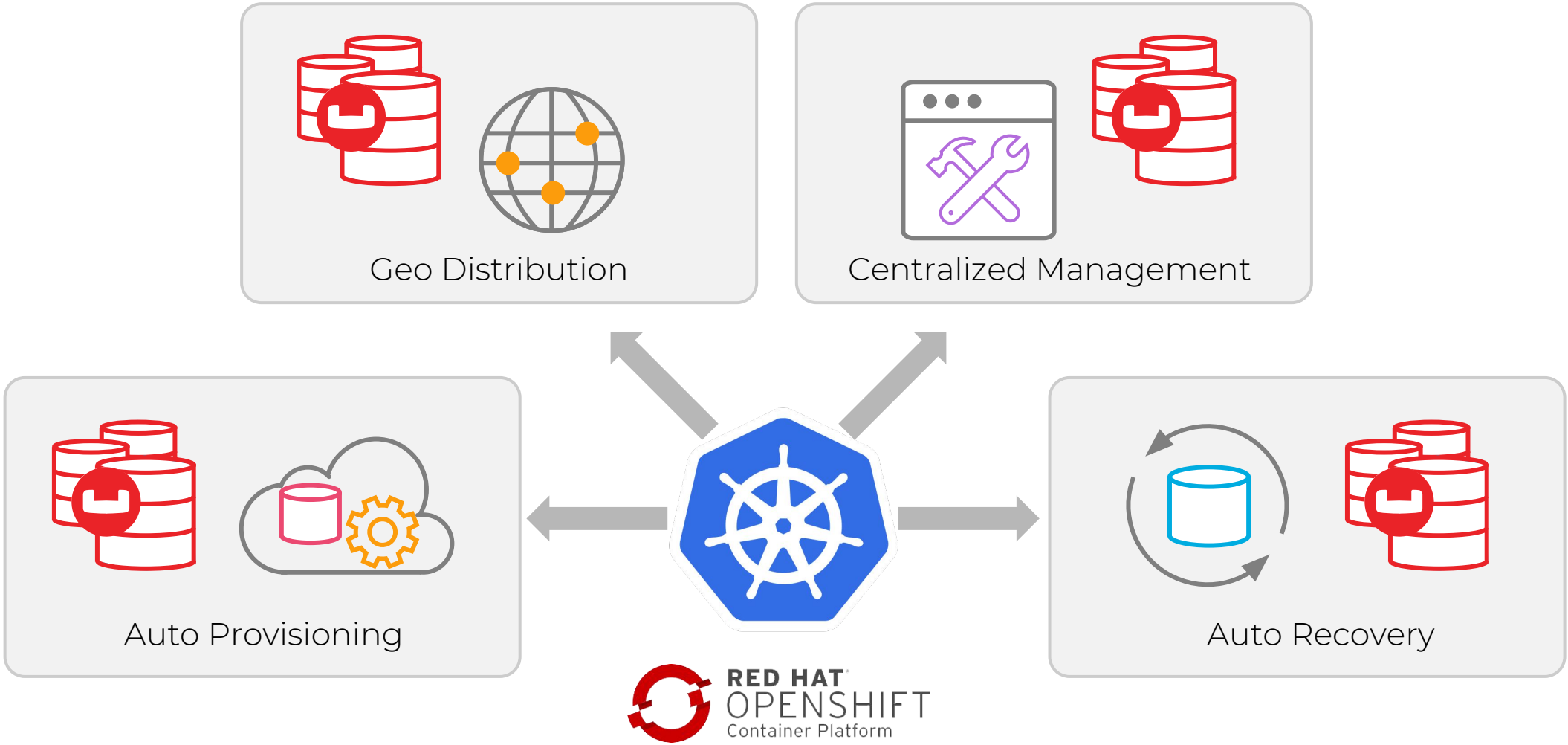
Couchbase Designed for Containerized Applications



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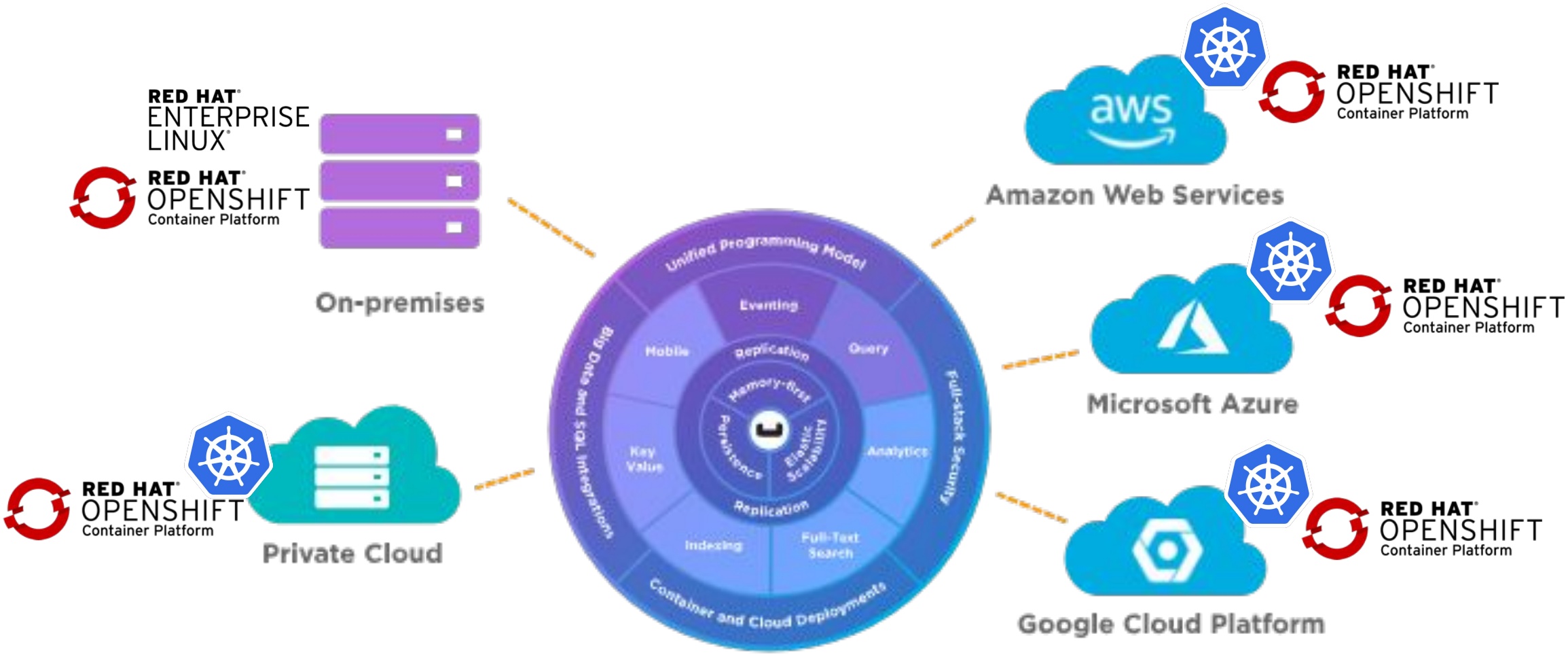
Couchbase and Red Hat enable hybrid/multi-cloud



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3 | COUCHBASE AUTONOMOUS OPERATOR

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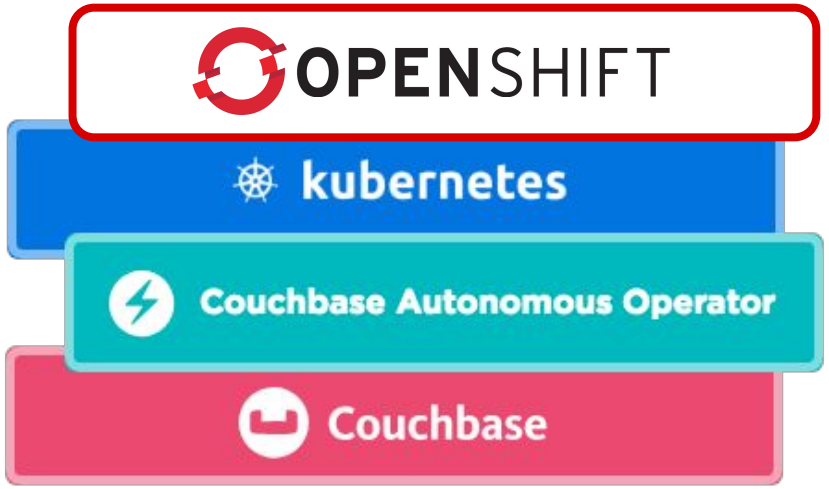
Introducing Couchbase Autonomous Operator



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.

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Couchbase Operator Configuration

```
14      indexStorageSetting: memory_optimized
15      autoFailoverTimeout: 30
16    buckets:
17      - name: couchbase-sample
18        type: couchbase
19        memoryQuota: 128
20        replicas: 3
21        ioPriority: high
22        evictionPolicy: fullEviction
23        conflictResolution: seqno
24        enableFlush: true
25        enableIndexReplica: false
26    servers:
27      - size: 2
28        name: data_and_index
29        services:
30          - data
31          - index
32        dataPath: /opt/couchbase/var/lib/couchbase/data
33        indexPath: /opt/couchbase/var/lib/couchbase/data
34      - size: 1
35        name: query_and_search
36        services:
37          - query
38          - search
39        dataPath: /opt/couchbase/var/lib/couchbase/data
40        indexPath: /opt/couchbase/var/lib/couchbase/data
```

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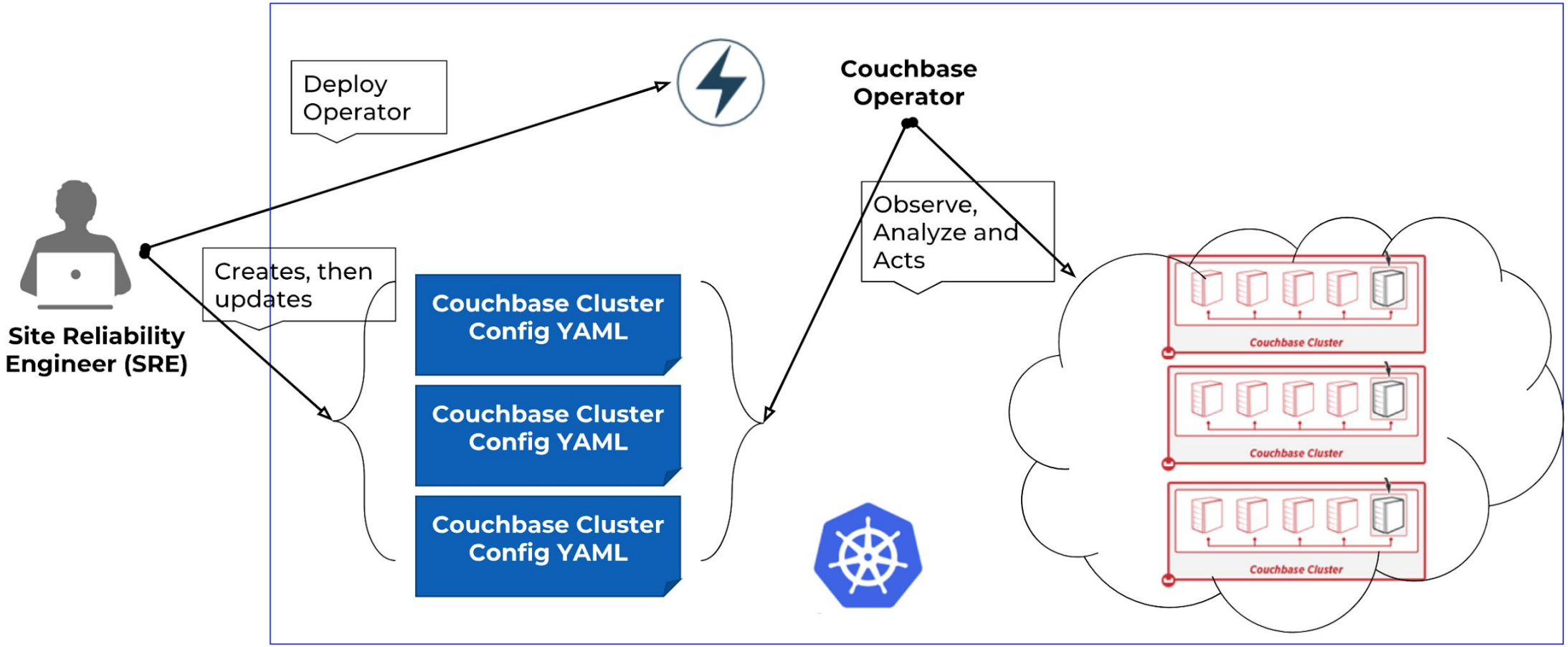
Architecture



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Key Benefits

1. **Best way to Run and Manage Couchbase in Your Data Center – Up to 95% Reduction in Operational Overhead**
2. **Automated Best Practices - Zero-Downtime Ops**
3. **Elastic scaling - Push a button Dynamic Scaling**

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4 | OPERATOR IN ACTION

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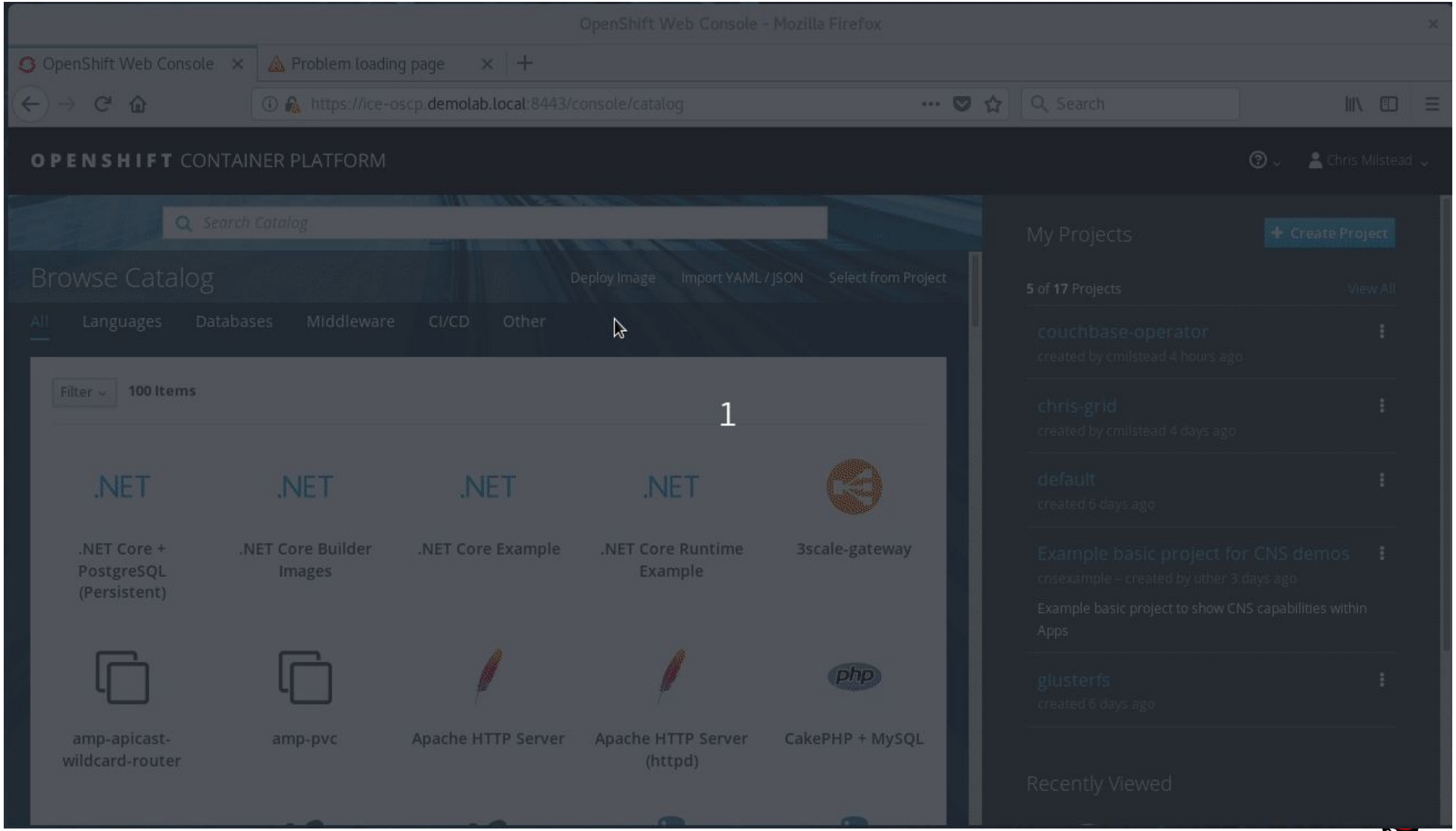

OpenShift Web Console - Mozilla Firefox
OpenShift Web Console
Problem loading page
https://ice-oscp.demolab.local:8443/console/catalog
Search
OPENSHIFT CONTAINER PLATFORM
Chris Milstead
Search Catalog
Browse Catalog
Deploy Image
Import YAML / JSON
Select from Project
All
Languages
Databases
Middleware
CI/CD
Other
Filter
100 Items
1
.NET Core + PostgreSQL (Persistent)
.NET Core Builder Images
.NET Core Example
.NET Core Runtime Example
3scale-gateway
amp-apicast-wildcard-router
amp-pvc
Apache HTTP Server
Apache HTTP Server (httpd)
CakePHP + MySQL
My Projects
Create Project
5 of 17 Projects
View All
couchbase-operator
created by cmilstead 4 hours ago
chris-grid
created by cmilstead 4 days ago
default
created 6 days ago
Example basic project for CNS demos
cnsexample – created by uther 3 days ago
Example basic project to show CNS capabilities within Apps
glusterfs
created 6 days ago
Recently Viewed

! cluster-role-user.yaml ! couchbase-cluster.yaml ×

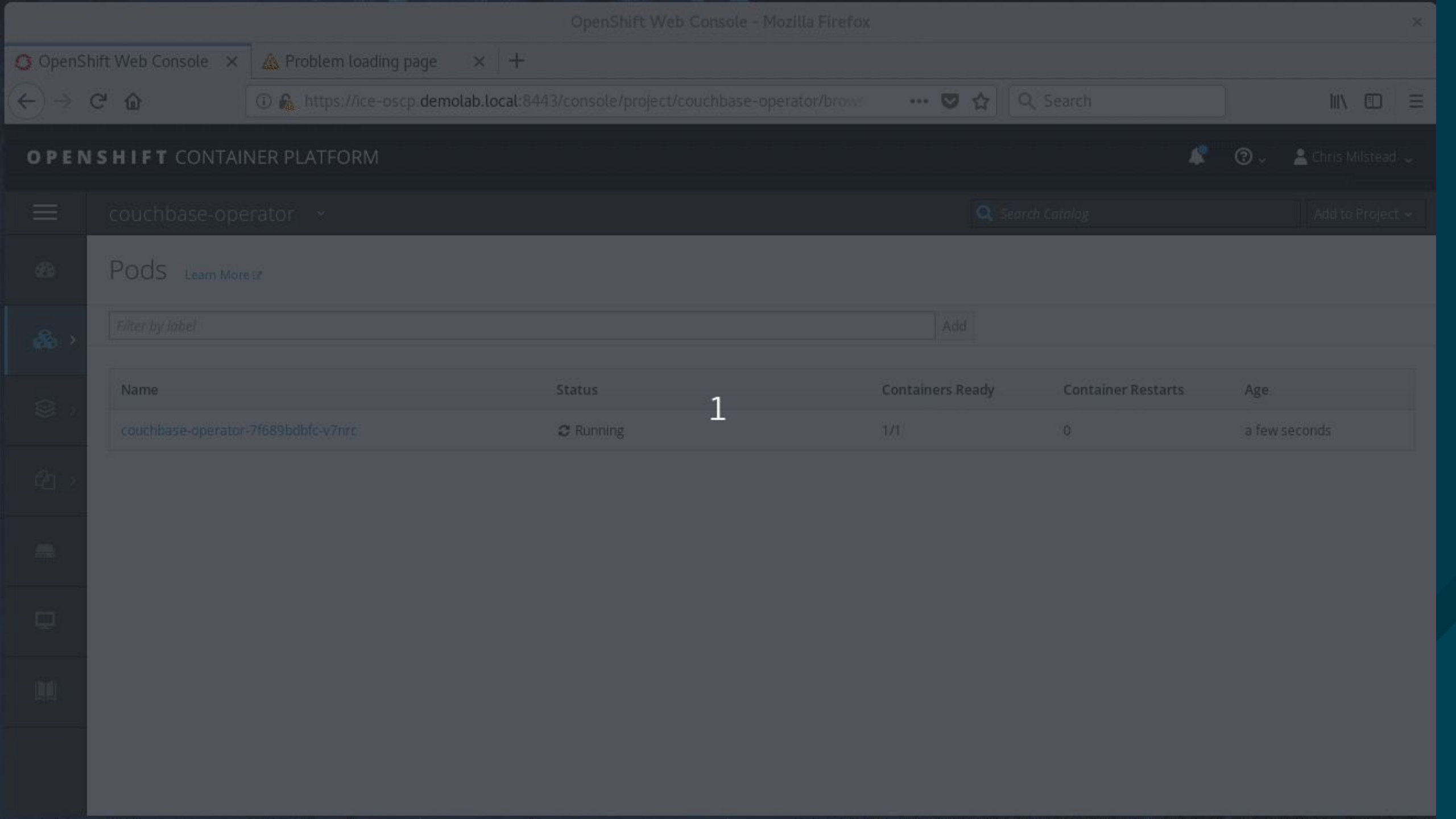
```yaml
apiVersion: couchbase.database.couchbase.com/v1beta1
kind: CouchbaseCluster
metadata:
  name: cb-example
spec:
  baseImage: couchbase/server
  version: enterprise-5.0.1
  authSecret: cb-example-auth
  exposeAdminConsole: true
  cluster:
    dataServiceMemoryQuota: 256
    indexServiceMemoryQuota: 256
    searchServiceMemoryQuota: 256
    indexStorageSetting: memory_optimized
    autoFailoverTimeout: 30
  buckets:
    - name: default
      type: couchbase
      memoryQuota: 128
      replicas: 1
      ioPriority: high
      evictionPolicy: fullEviction
      conflictResolution: seqno
      enableFlush: true
      enableIndexReplica: false
  servers:
    - size: 1
      name: all_services
      services:
        - data
        - index
        - query
        - search
      dataPath: /opt/couchbase/var/lib/couchbase/data
      indexPath: /opt/couchbase/var/lib/couchbase/data
```

Naming

Image to use

Size

How many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OpenShift Web Console
Problem loading page
https://ice-oscp.demolab.local:8443/console/project/couchbase-operator/brow
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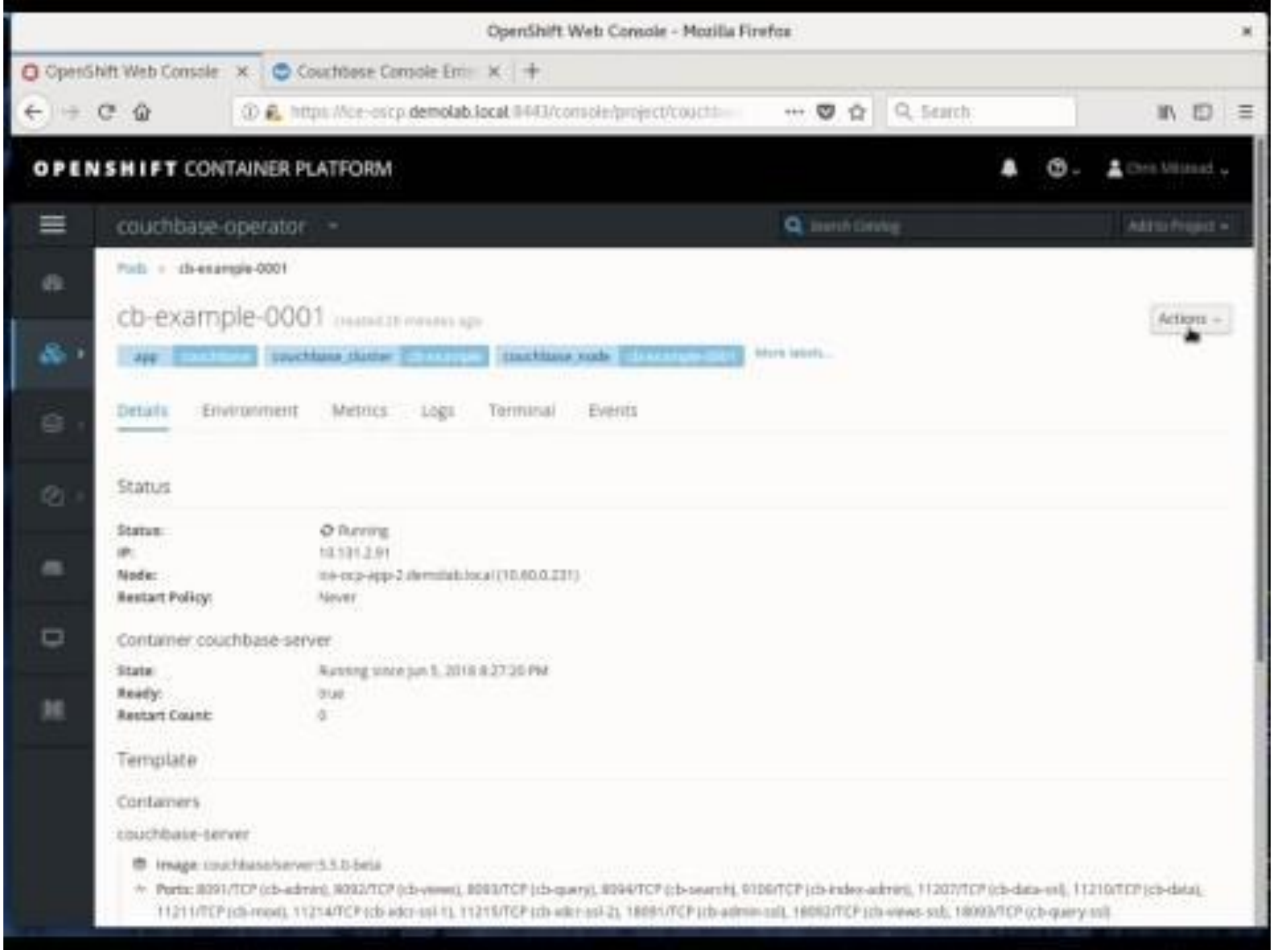
Chris Milstead
couchbase-operator
Search Catalog
Add to Project
Pods
Learn More
Filter by label
Add
Name
Status
Containers Ready
Container Restarts
Age
couchbase-operator-7f689bdbfc-v7nrc
Running
1/1
0
a few seconds
1


OpenShift Web Console - Mozilla Firefox
OpenShift Web Console
Couchbase Console
Search
OPENSHIFT CONTAINER PLATFORM
couchbase-operator
Pods
cb-example-0001
cb-example-0001
Actions
Details
Environment
Metrics
Logs
Terminal
Events
Status
Status:
Running
Node:
Restart Policy:
Never
Container couchbase-server
State:
Ready:
Restart Count:
Template
Containers
couchbase-server
Image:
Ports:

Questions?

Couchbase

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