ORACLE

Bringing Devs, DBAs, and GenAI Together

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http://bit.ly/oraclespringboot
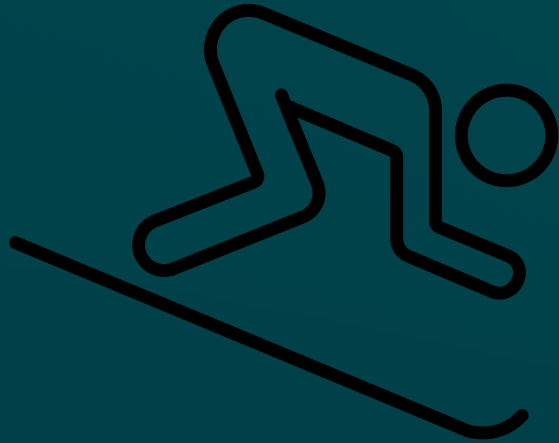
ORACLE

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Member Technical Staff

Mission Critical Technologies

Top 3 Areas

1. Kubernetes as a vehicle to bring DBAs, Developers and Gen AI together

2. Design of Backend as a Self-Service (BaaS) multi-cloud platforms
   - **Cloud-agnostic** and **on-premises** stack components

3. Delivering value from Gen AI – on structured *and* unstructured data
   - Starting with knowledge assistants (copilots) for
     - Support teams – root cause analysis
     - Generating SQL to chat with data
     - Developer documentation

Top 2 Themes

1. Simple

2. Collaborate

- ex-DBA at UBS and Credit Suisse

- Designed the Hands on Workshop to help Oracle DBA's understand and support Microservices Architecture and Kubernetes Infrastructure
https://bit.ly/KubernetesForDBAs

- Built the automation for Oracle Backend for Spring Boot and Microservices Platform:
https://bit.ly/oraclespringboot
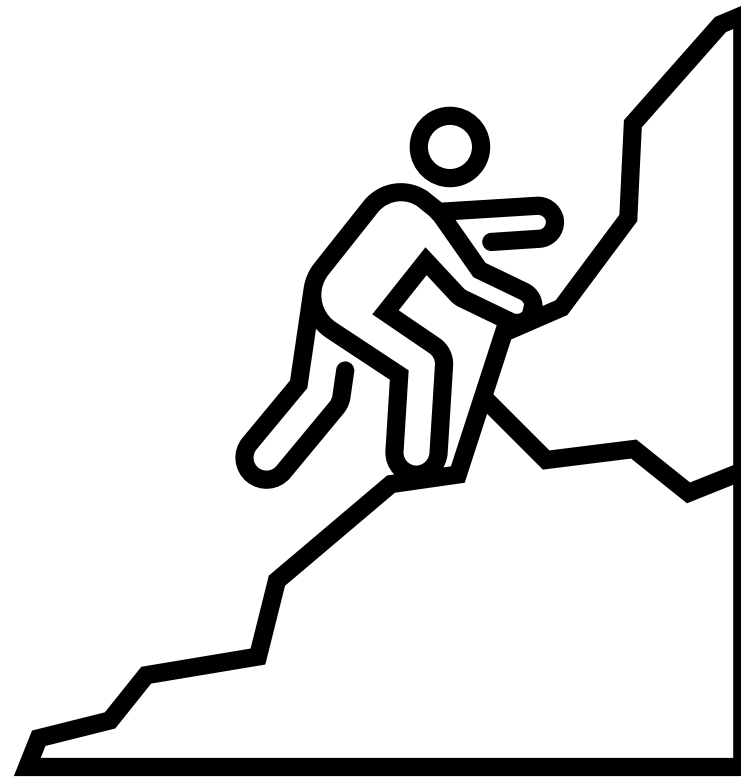
John Lathouwers
Developer Evangelist
Oracle Database

Who Are We?

Developer Evangelists

- Real World Experience

- Ask Questions

- Listen

- Translators?!?

Goal:

- Make Developers Life Easier

Education and Innovation

Contribute our Knowledge and Expertise
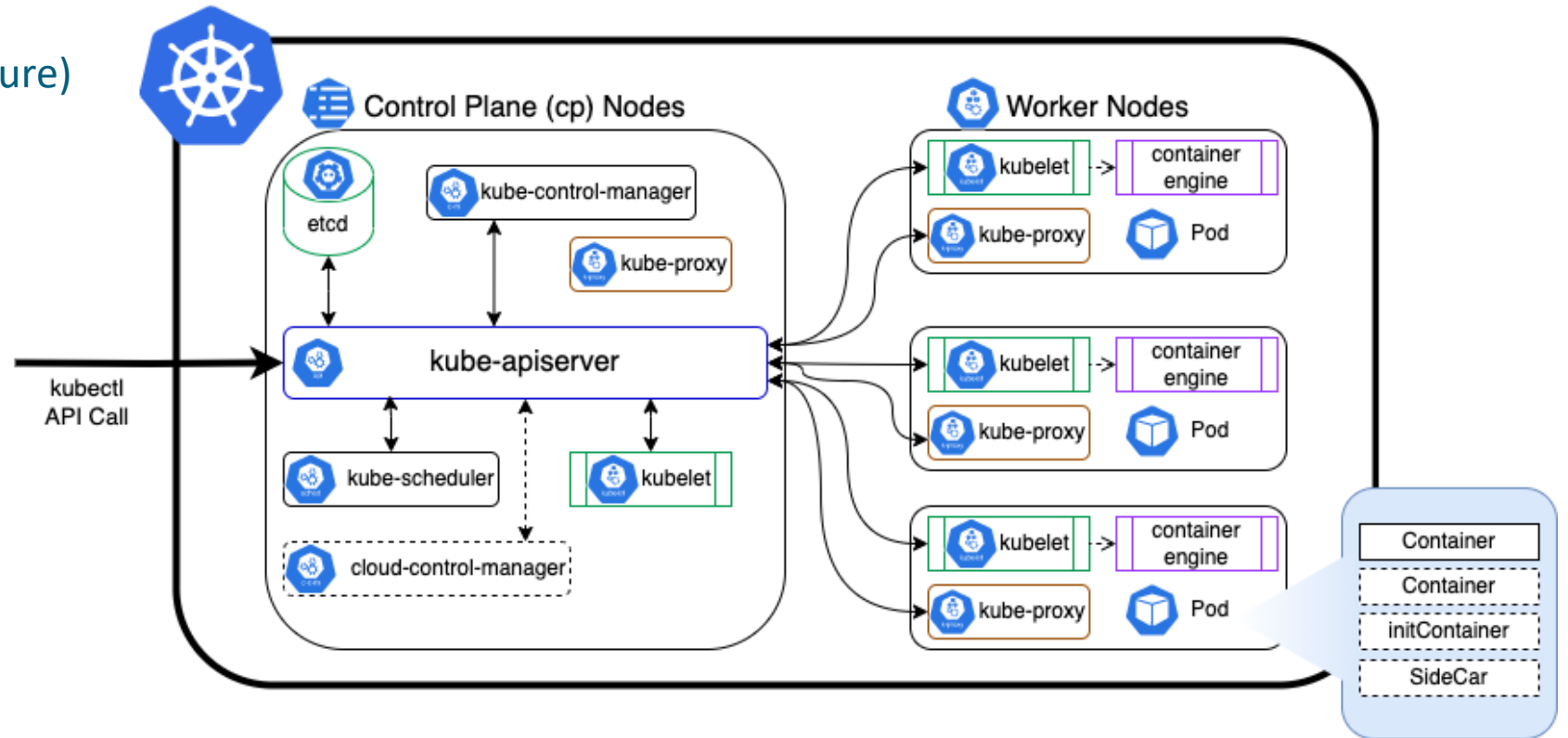
Microservices & Kubernetes

Kubernetes Cluster

A loose comparison with a RAC cluster

- kubectl (srvctl)
- Control Plane (Grid Infrastructure)
  - API Server (crsd – sort of)
  - etcd (OCR)
- Worker Nodes (Cluster Nodes)
- Pods (DB Instances)
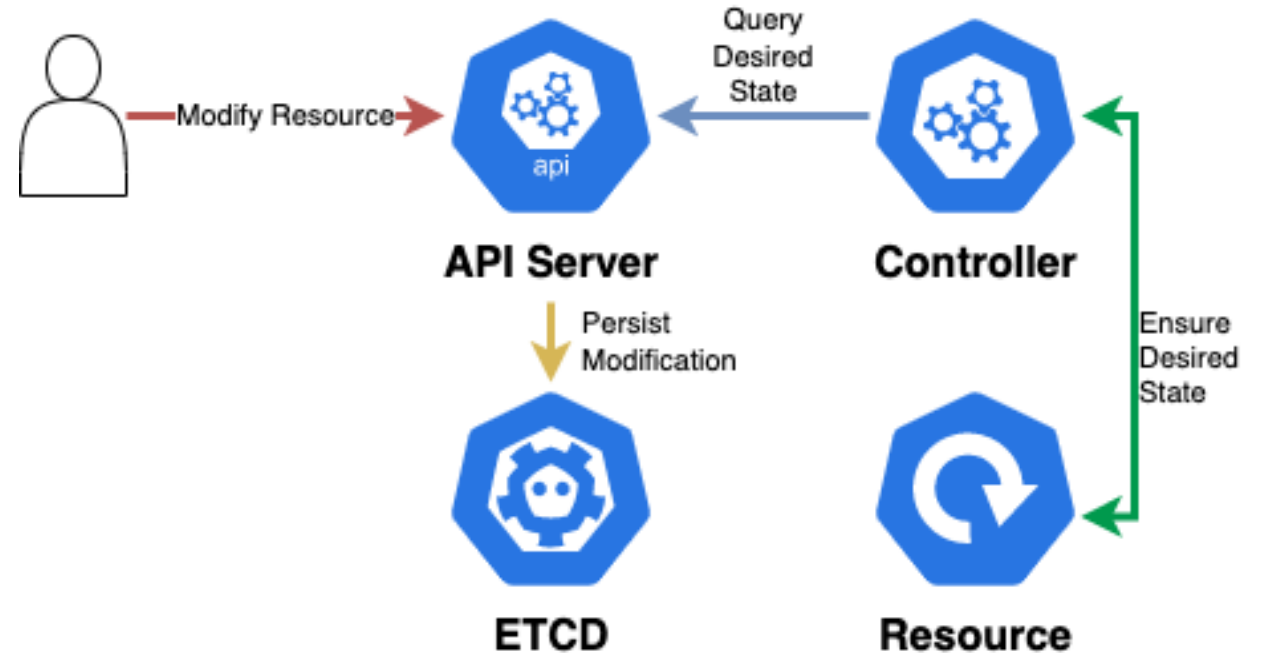- Containers (Schema)
- kube-proxy (Listeners)

Custom Resource Definitions

Volume

Service

Secret

Namespace

Pod

CronJob

Out-of-the-Box

CRDs provide a means to extend the types of resources that can be managed in a Kubernetes Cluster.

CRDs

- Oracle Autonomous Database
- Oracle Autonomous Container Database
- Containerized Oracle Single Instance Database and Data Guard
- Containerized Oracle Sharded Database
- Oracle Multitenant Database
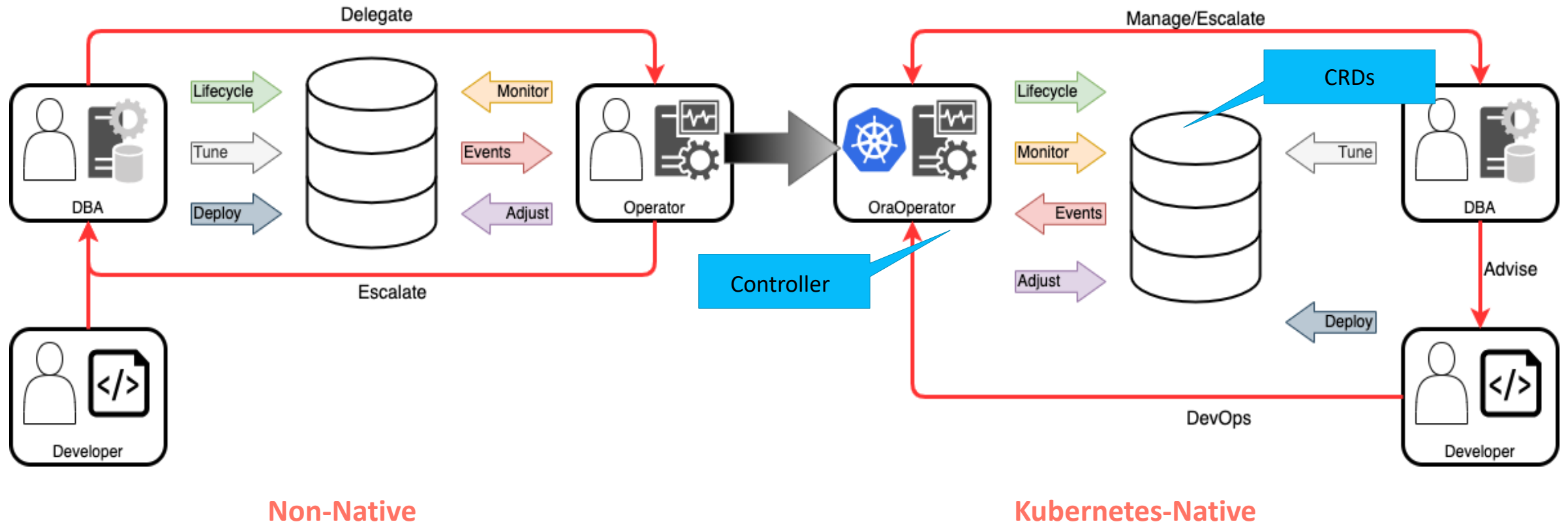- Oracle Base Database Cloud Service (BDBCS)

Controllers

Kubernetes comes with a set of built-in *Controllers* that run inside the *kube-control-manager:*

- *Operate in a continuous loop*

- *Monitor Current State of Resources*

- *Compare Current State with Desired State*

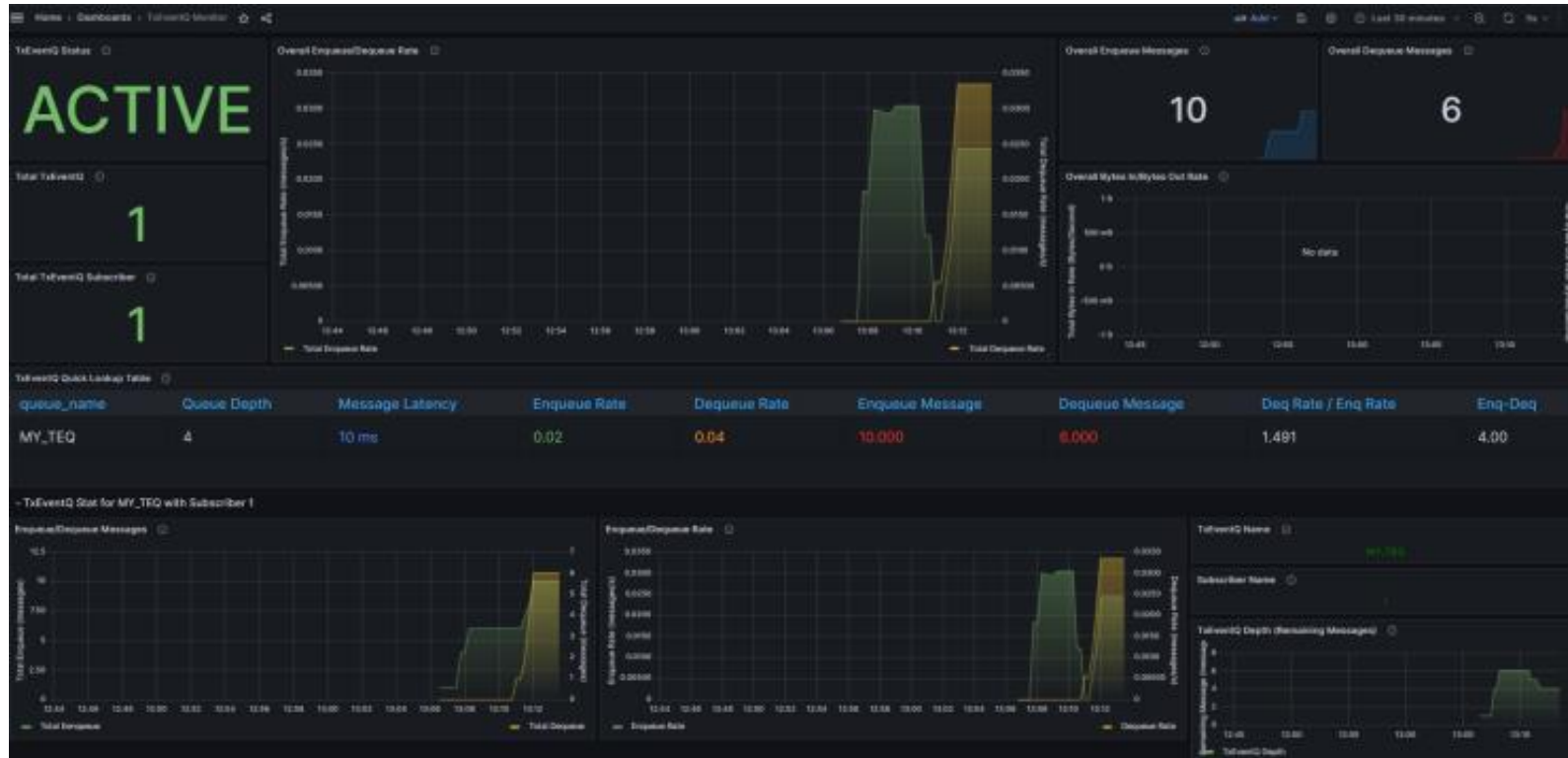- *Send Instructions to ensure Current State is Desired State*

Oracle Database Operator for Kubernetes

aka OraOperator

Non-Native

Kubernetes-Native

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Oracle Database Observability Exporter

Oracle Database
Prometheus/Loki
Grafana

Standard Metrics
- Availability
- Session Activity
- Wait Events
- Tablespace
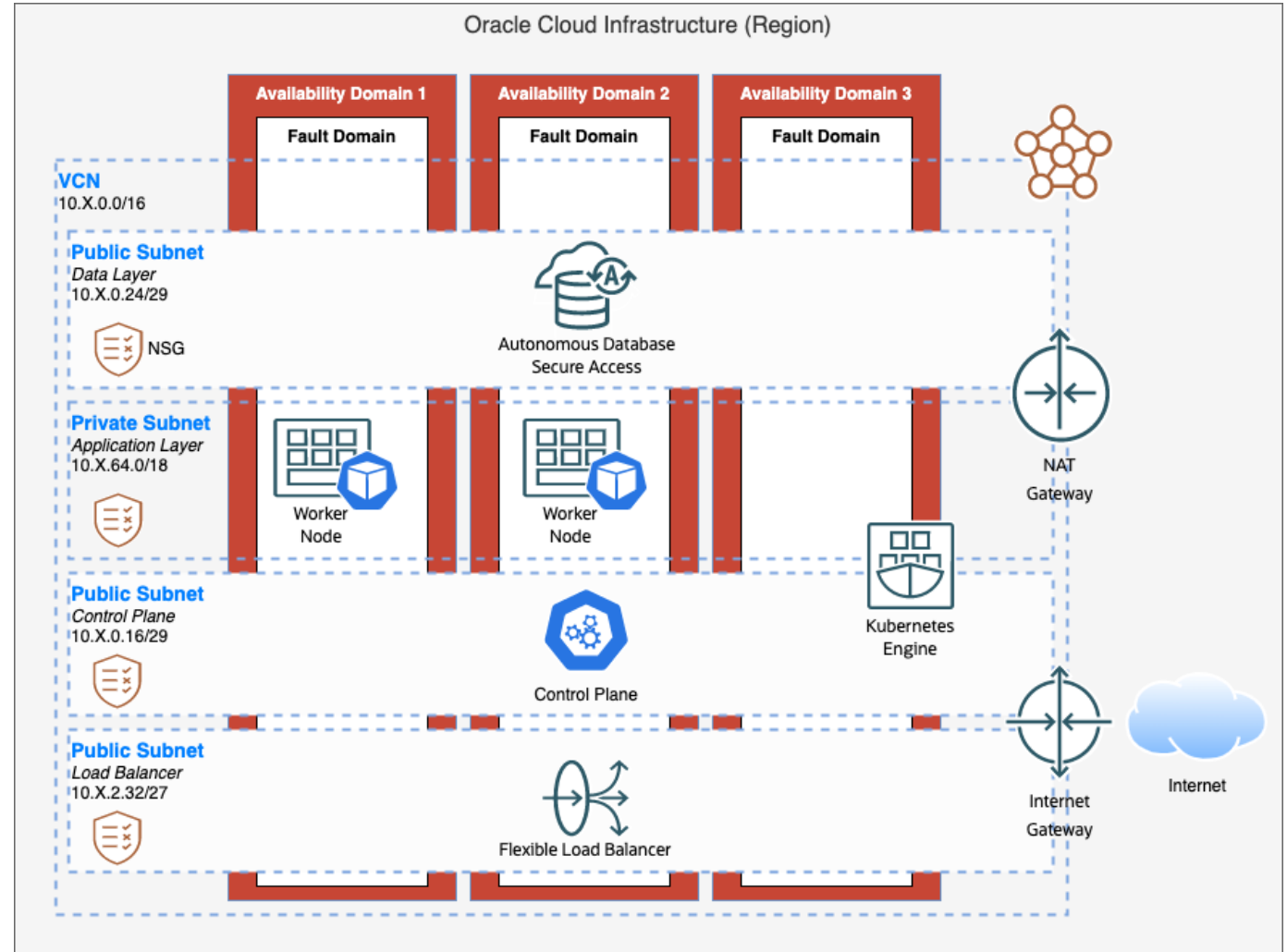- Processes
- Session

Experience into a Platform

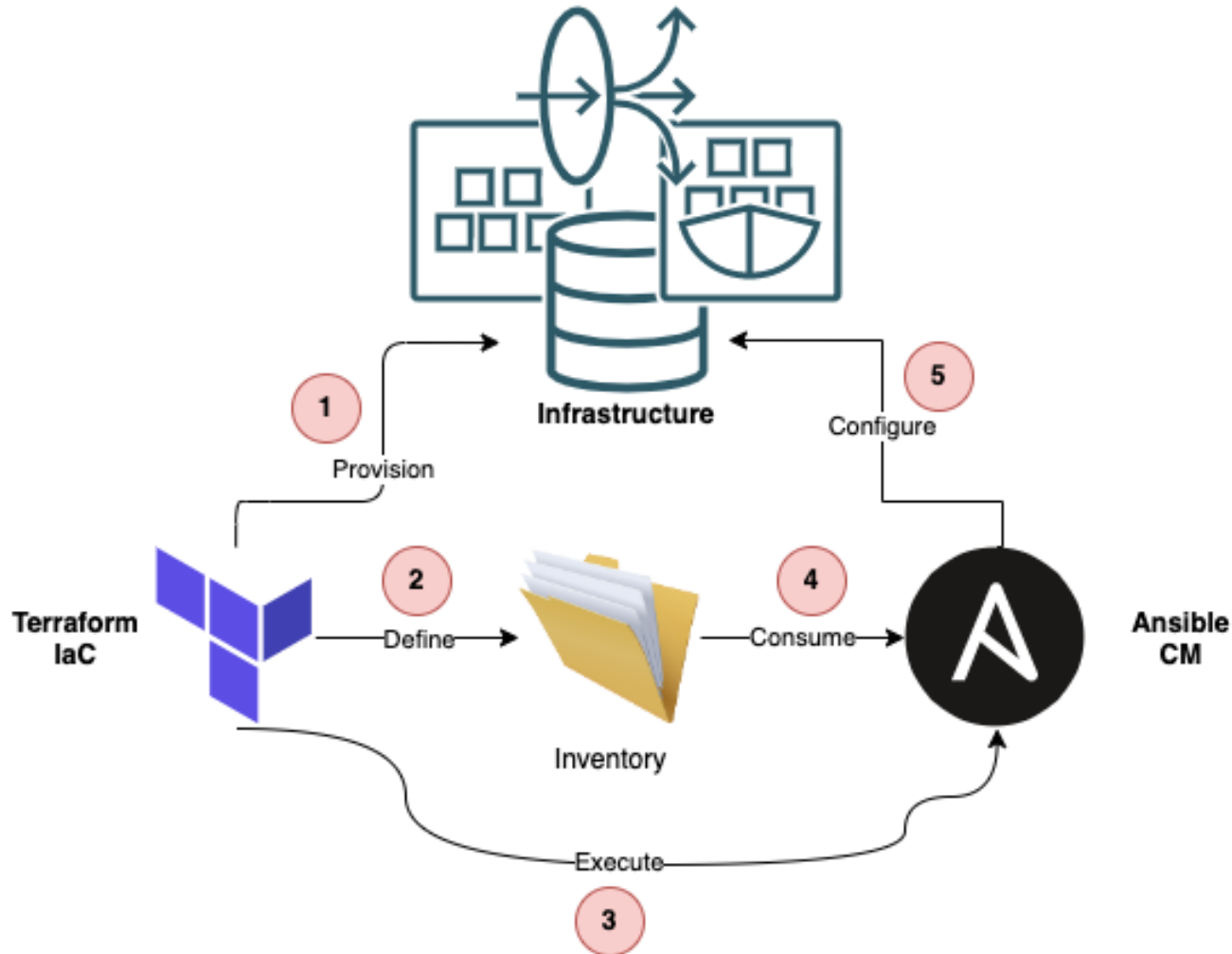Understand the Challenges, by Experiencing Them

Infrastructure as Code

- Autonomous Database
- Networking
  - NAT Gateway
  - Internet Gateway
  - Security Groups
- Worker Nodes
- Control Plane
- Load Balancer (Service)

Infrastructure as Code meets Configuration Management

Process

1. Provision Infrastructure as Code
2. Define Infrastructure Inventory
3. Run Ansible Configuration Management
4. Ansible Consumes Inventory
5. Configure Infrastructure

Benefits

- Declarative
- Easily Extendable
- Isolated IaC vs CM
  - Multiplatform
  - Testing optimisation
- Parallelisation
 - Configure as Infrastructure is available

SQLcl + Liquibase

An ***initContainer*** is perfect for ensuring the database has the correct users, permissions, and objects present for the application container to use.

Liquibase is an open-source tool that enables you to define, manage, and version control your database schema.

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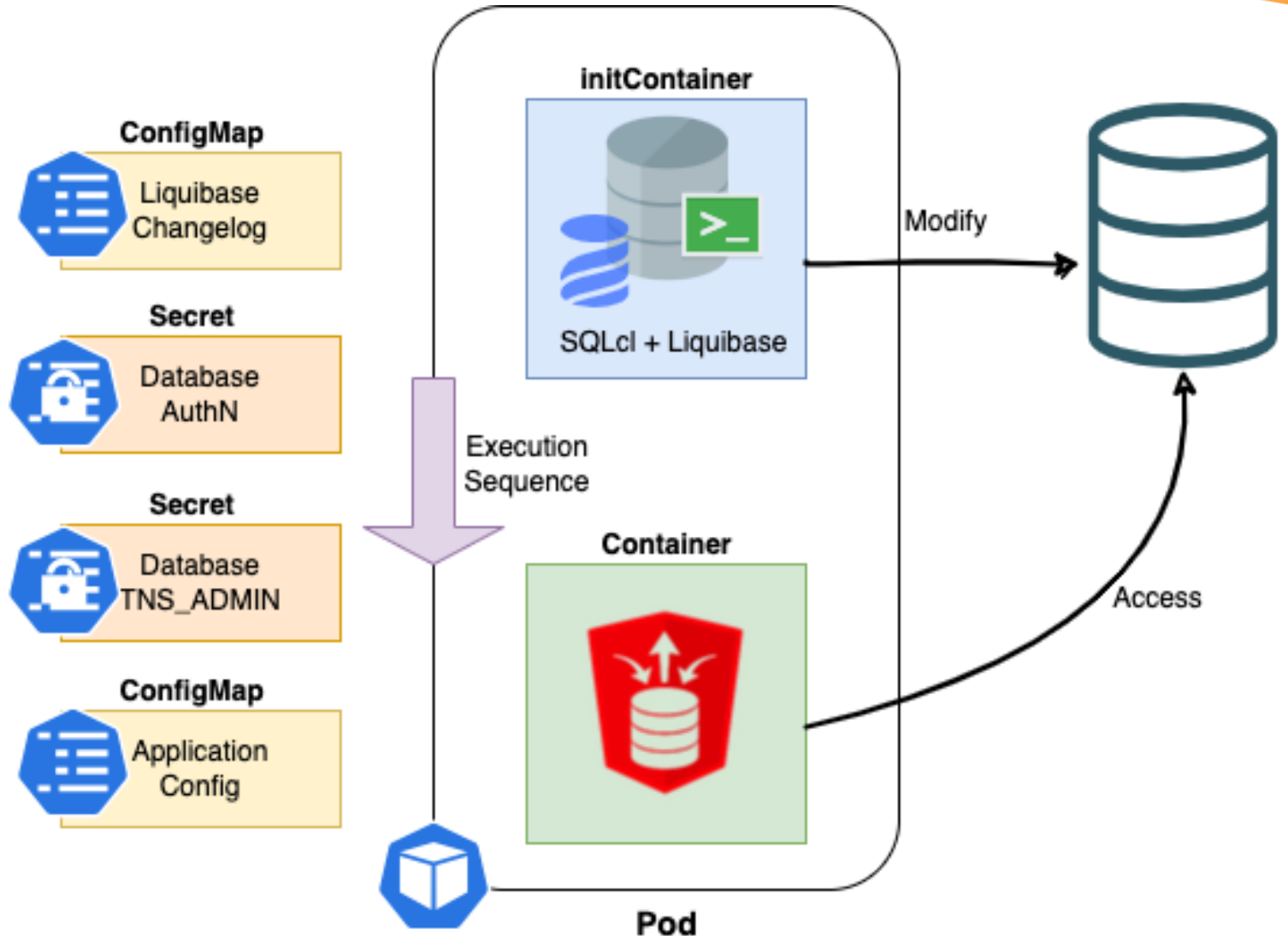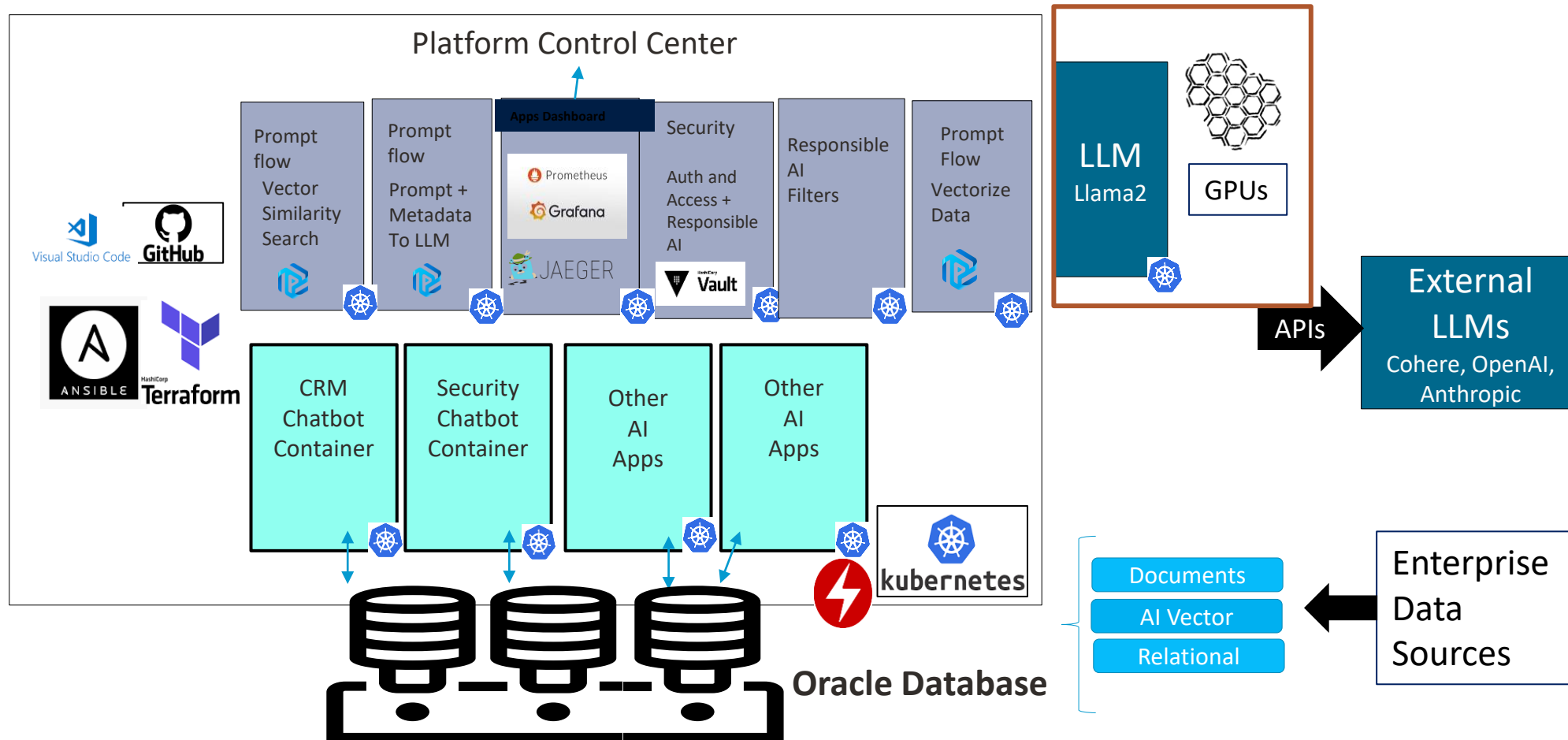
A Production Platform
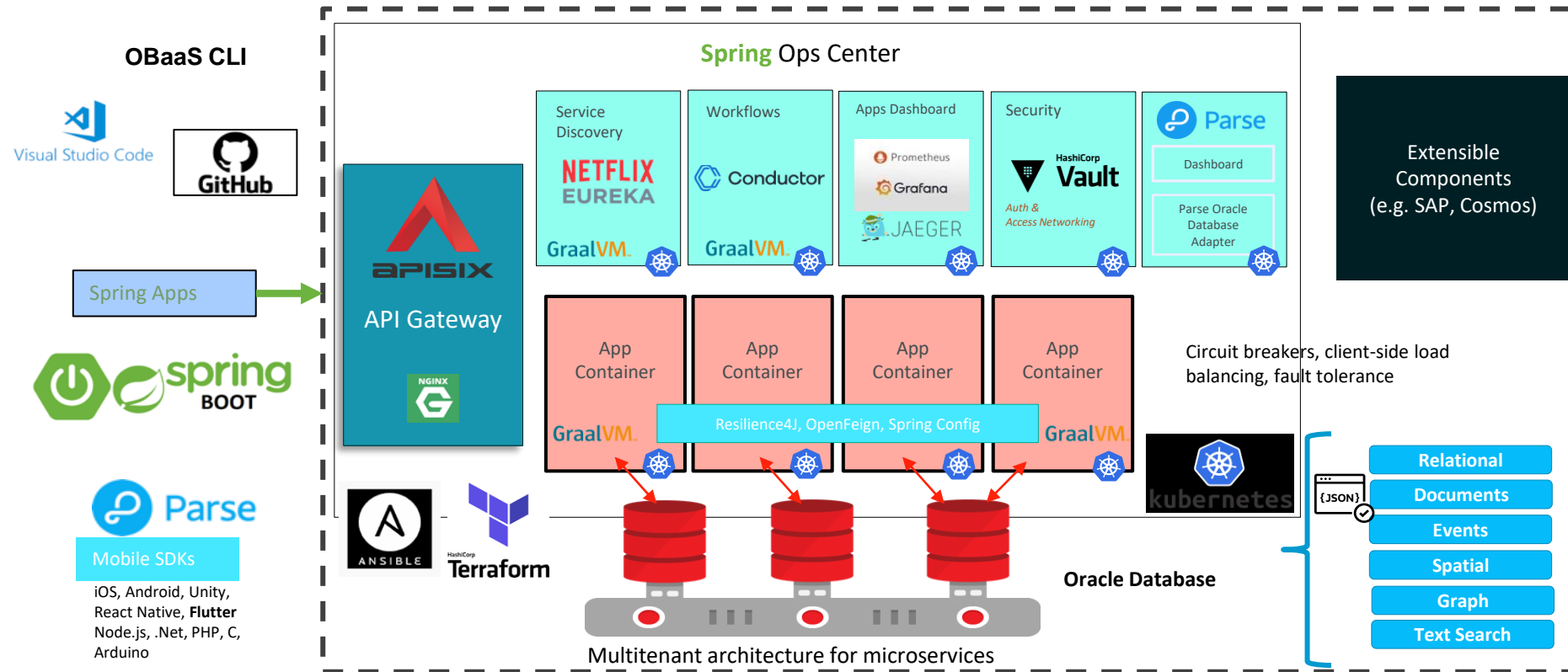
Oracle Backend for SpringBoot and Microservices

What's Next... Docs for Devs

AI and Retrieval Augmented Generation (RAG)

Resources

LiveLabs and More

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Discover More

Kubernetes for DBAs

http://bit.ly/KubernetesForDBAs

Cloudbank – An Oracle Backend for SpringBoot and Microservices Example

https://bit.ly/CloudBankOnOBaaS

Oracle Databases for Containers and Kubernetes

https://www.oracle.com/uk/database/kubernetes-for-container-database/

Getting started with Microservices

https://developer.oracle.com/technologies/microservices.html

Thank You

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