KAFKA ON KUBERNETES

WITH

By Shubham Rawat, Red Hat

STRIMZI

About me

- Software Engineer at Red Hat
- Working in Managed Application Services Team
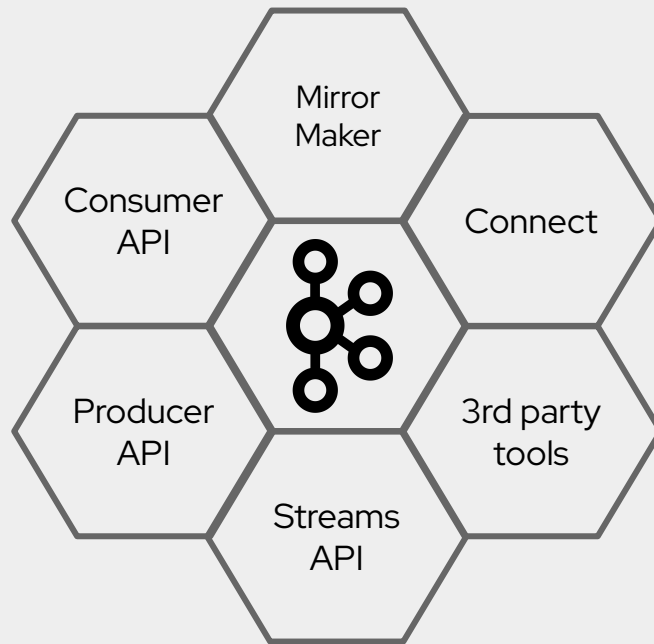- Love to contribute to open source projects

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Agenda

- Introduction to Kafka and Kubernetes
- Why run Kafka on Kubernetes
  - ….. how many challenges
- Introduction to Strimzi
- Demo Session

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Introduction to Kafka

- Distributed Messaging System
- Scalable and Fault Tolerant
- Integrated Ecosystem

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Kafka Topic

Kubernetes

- Open source container platform
- System for automating, scaling and managing containerized applications.
- Abstracts underlying hardware (nodes)

Why Kafka on Kubernetes

- Kafka is designed distributed and scalable
- Great infrastructure abstraction
- Portability to span across on-premises and public, private, or hybrid clouds

**Problems faced when deploying kafka on Kubernetes**

- Knowledge about both kafka and Kubernetes
- Complex work manage and operate Kafka
- Time taking process

Is there some easy way to deploy Kafka on Kubernetes?
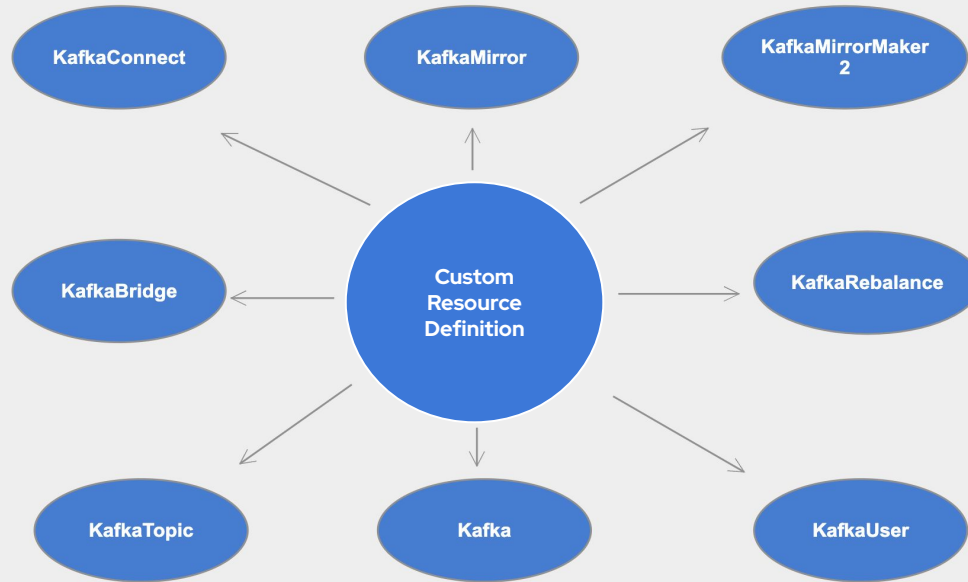
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Strimzi

- A CNCF sandbox open source project
- Operator for running Kafka on Kubernetes
- Provides Kubernetes native experience
  - Extends Kubernetes API
  - Provides CRDs for native experience
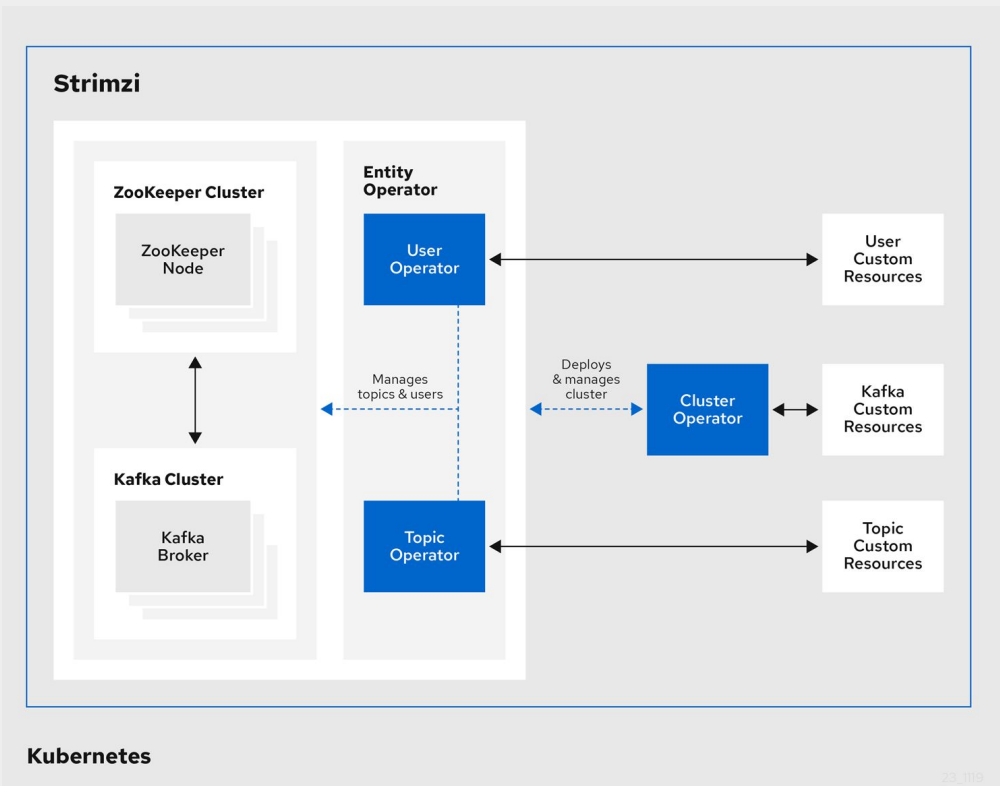- Built in Security
- Easy to use
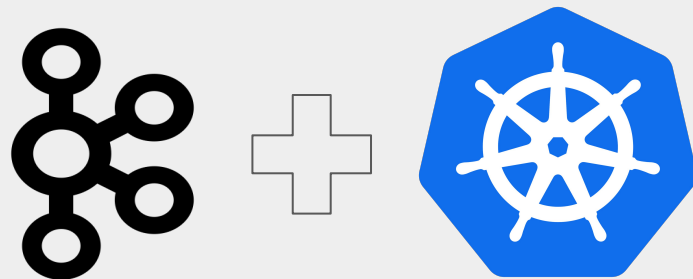
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Example CRD

```yaml
apiVersion: kafka.strimzi.io/v1beta2
kind: Kafka
metadata:
  name: my-cluster
spec:
  kafka:
    version: 3.6.0
    replicas: 3
    listeners:
      - name: tls
        port: 9093
        type: internal
        tls: true
    # ...
  zookeeper:
    # ...
```

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Kafka Custom Resources

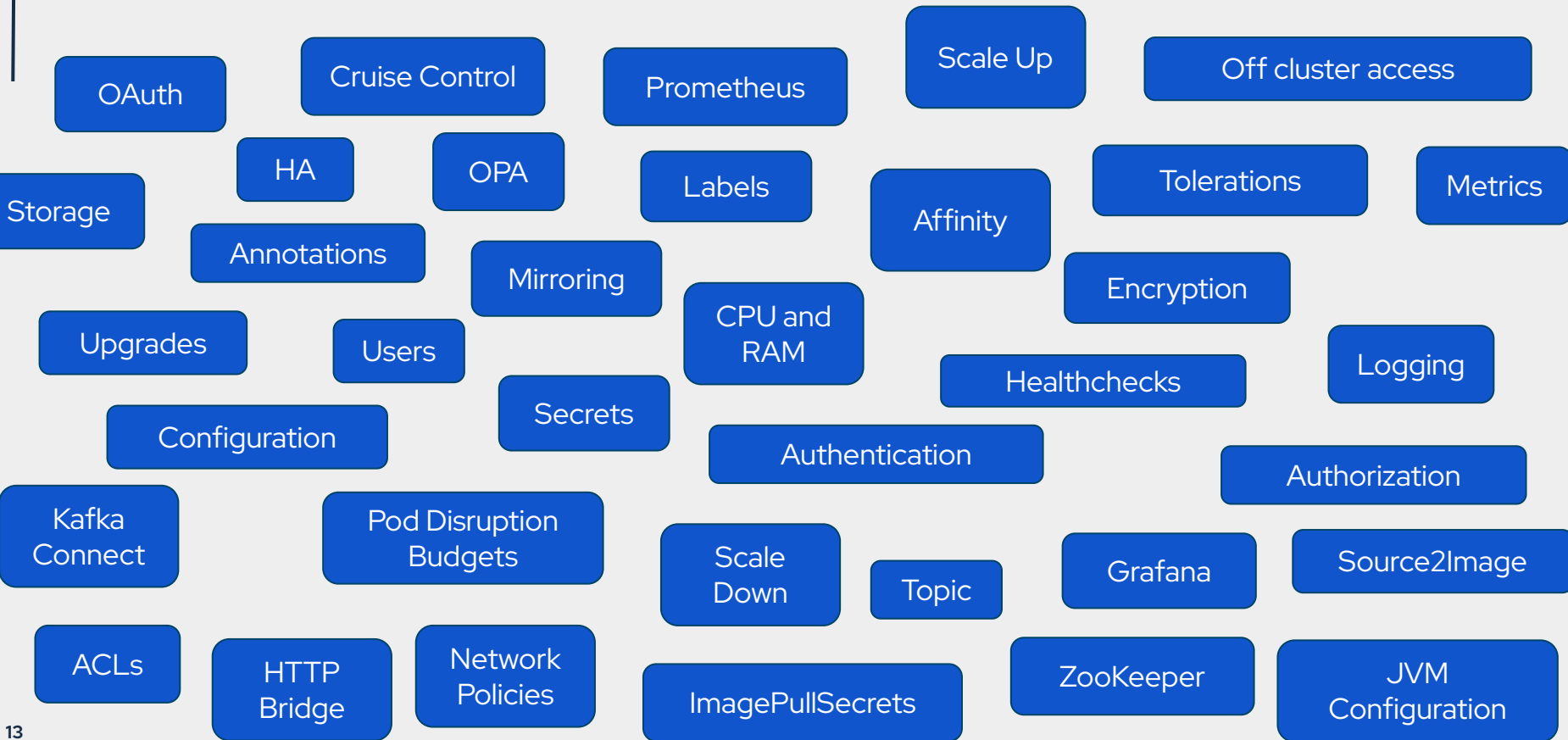# Operators within Strimzi Architecture

Operators

- Cluster Operator
- User Operator
- Topic Operator

DEMO

- Install the operator
- Kafka Resource
- Kafka Topic and User Resource
- HelloWorld Application

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OAuth

Cruise Control

Prometheus

Scale Up

Off cluster access

HA

OPA

Labels

Affinity

Tolerations

Metrics

Storage

Annotations

Mirroring

Encryption

Upgrades

Users

CPU and RAM

Healthchecks

Logging

Secrets

Configuration

Authentication

Authorization

Kafka Connect

Pod Disruption Budgets

Scale Down

Topic

Grafana

Source2Image

ACLs

HTTP Bridge

Network Policies

ImagePullSecrets

ZooKeeper

JVM Configuration

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STRIMZI

Strimzi Friends

14

Strimzi is used by

Procure Ai

axual

Lightbend

SBB CFF FFS

LITTLE HORSE

swisscom

baloise

GRUPOMASMOVIL

MARLOW NAVIGATION

SMART iX

ATRUVIA

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Reach out to the community

🌐 https://strimzi.io/

https://github.com/strimzi

@strimziio

https://youtube.com/c/Strimzi

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Thank you

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