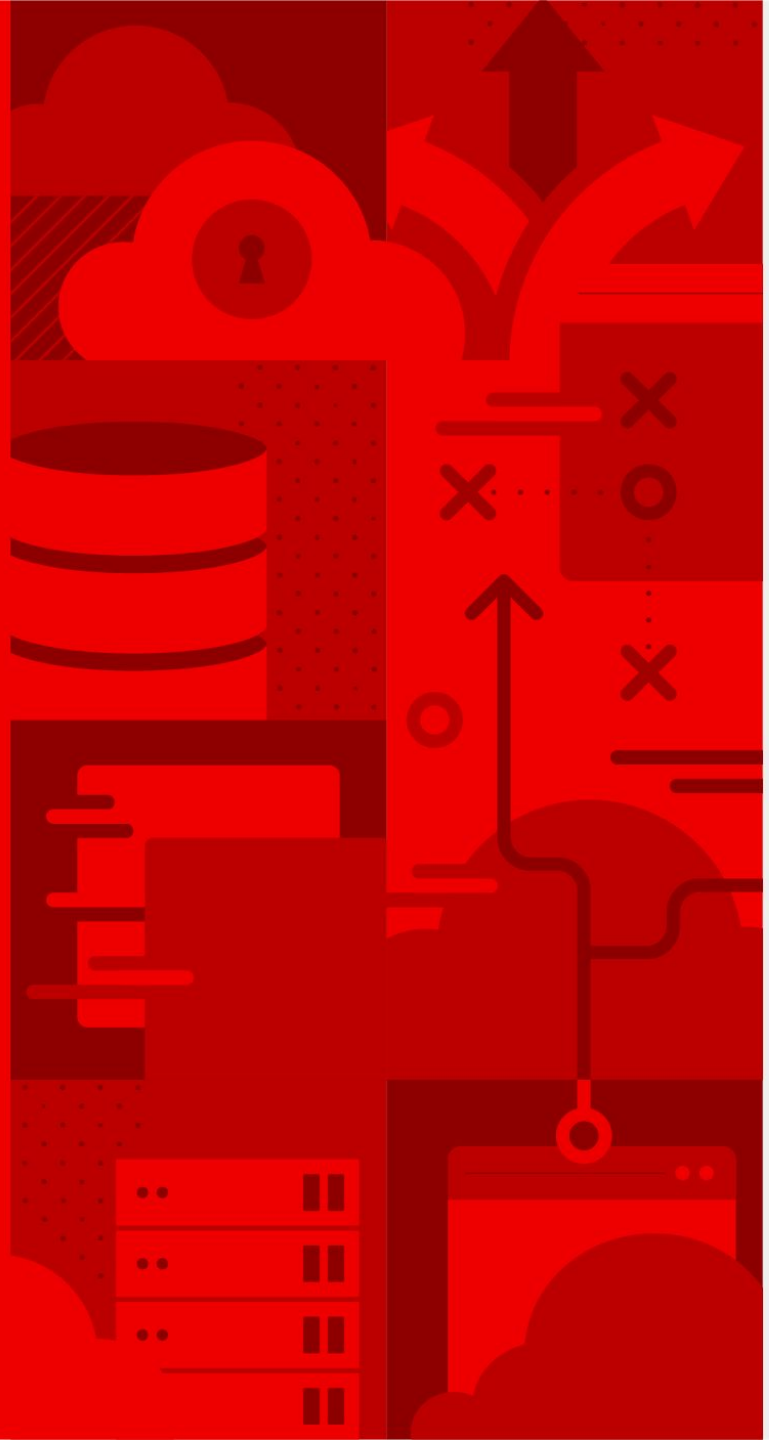

Managing applications with operators

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Senior Software Engineer
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Red Hat

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What is an Operator

An Operator is a method of packaging, deploying and managing a Kubernetes application. A Kubernetes application is an application that is both deployed on Kubernetes and managed using the Kubernetes APIs and kubectl tooling.

To be able to make the most of Kubernetes, you need a set of cohesive APIs to extend in order to service and manage your applications that run on Kubernetes. You can think of **Operators** as the **runtime that manages this type of application on Kubernetes**.

https://coreos.com/operators

What is the Operator Framework

Operator SDK

The Operator SDK is a framework that uses the controller-runtime library to make writing operators easier. Provides high level APIs, tools and extensions.

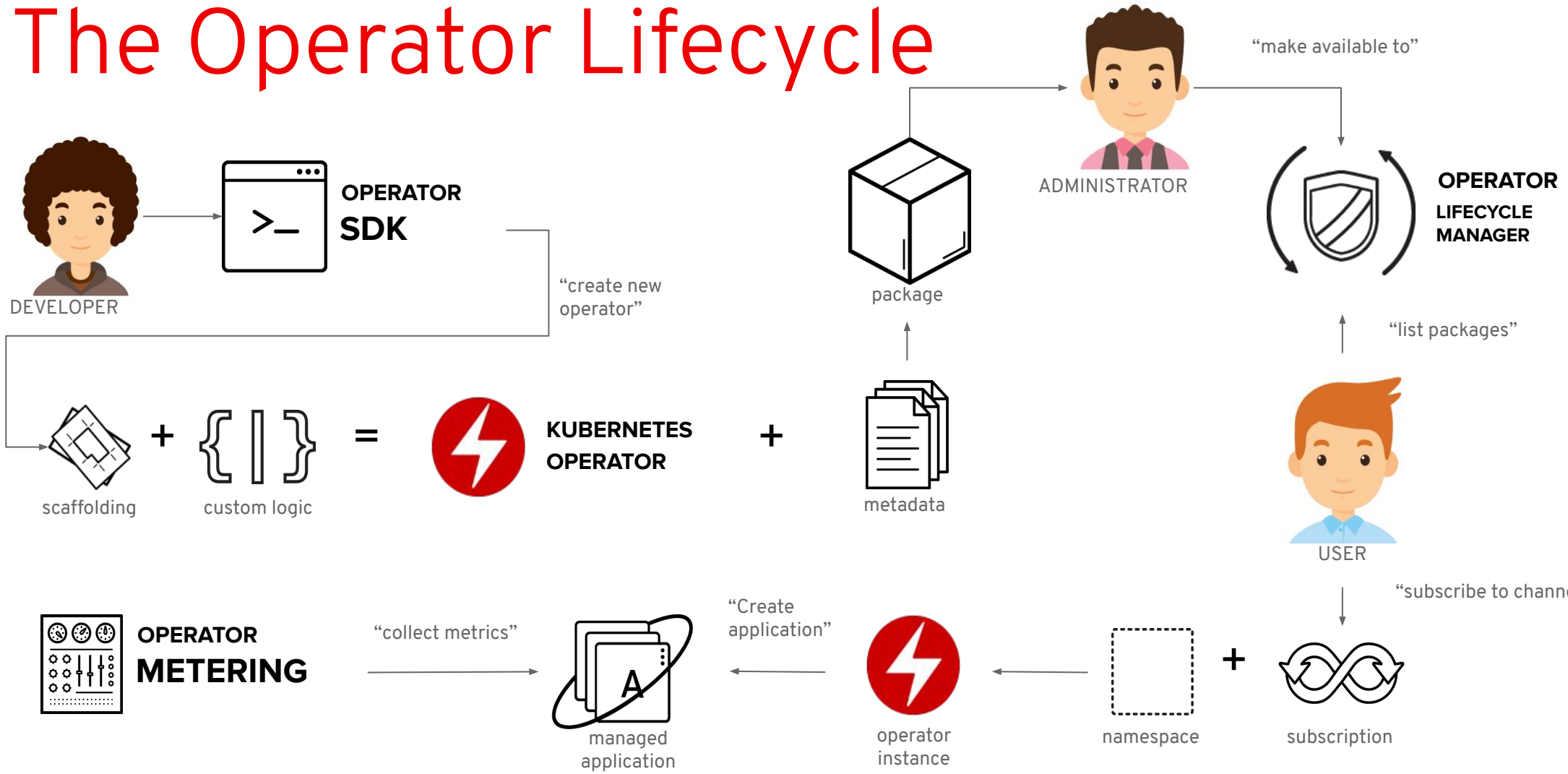
Operator Lifecycle Manager

OLM extends Kubernetes to provide a declarative way to install, manage, and upgrade operator and their dependencies in a cluster.

Operator Metering

Operator Metering records historical cluster usage. It can generate usage reports showing usage breakdowns by pod or namespace over arbitrary time periods.

The Operator Lifecycle



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Design a meaningful Operator

What benefit will an operator bring to my application lifecycle?

What do you want to deploy

Custom Resources Definitions (a.k.a. the API)

Think about upgrades/migrations/recovery

Implement an Operator

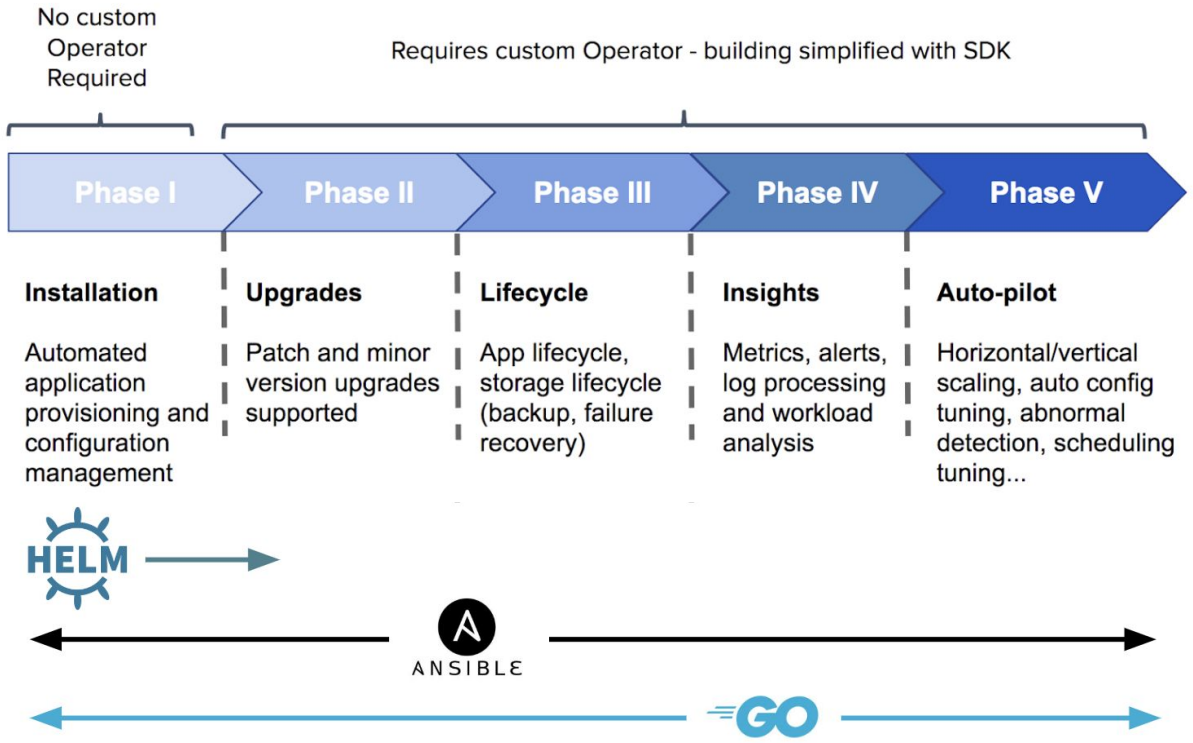
Operator-sdk

- Go
- Helm charts
- Ansible playbooks

Interact with the K8s API using any language of your choice

- Java - JVM Operators (Spark Operator)
- Javascript
- ...

Types of Operators



Implement an Operator

Add OpenAPIV3Schema validation

Use the State wisely

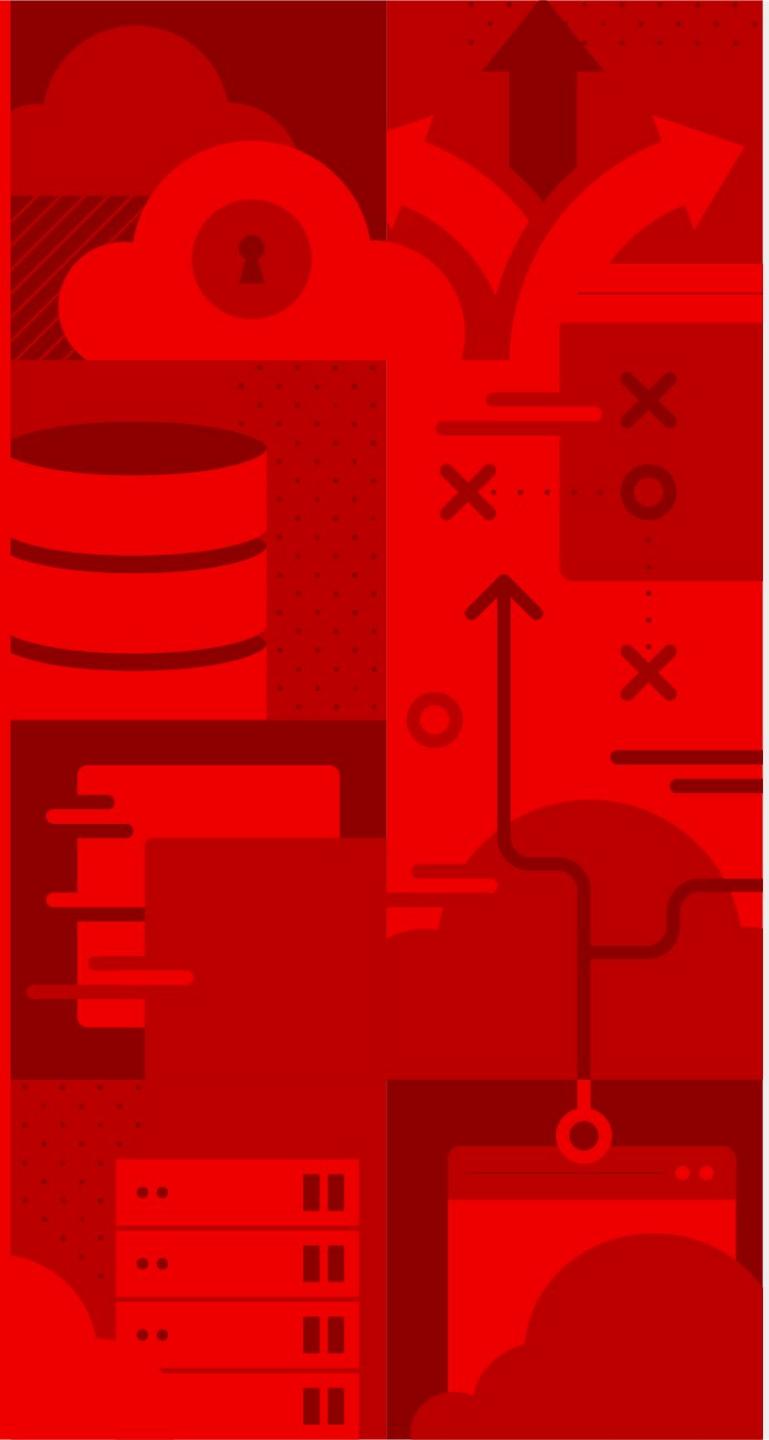
Leverage the K8S API for resource monitoring (Reconcile Loop)

Leverage on other controllers when possible (e.g. Deployment Controller)

Unit tests

End to end (e2e) tests

Operator Scorecard



The Go Operator

Use the operator-sdk to:

- Create a new project
- Add a new CRD
- Add a new controller
- Run the operator
- Deploy the operator

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Beyond the Operator implementation

Operator Metering

The Operator Lifecycle Manager

The OperatorHub

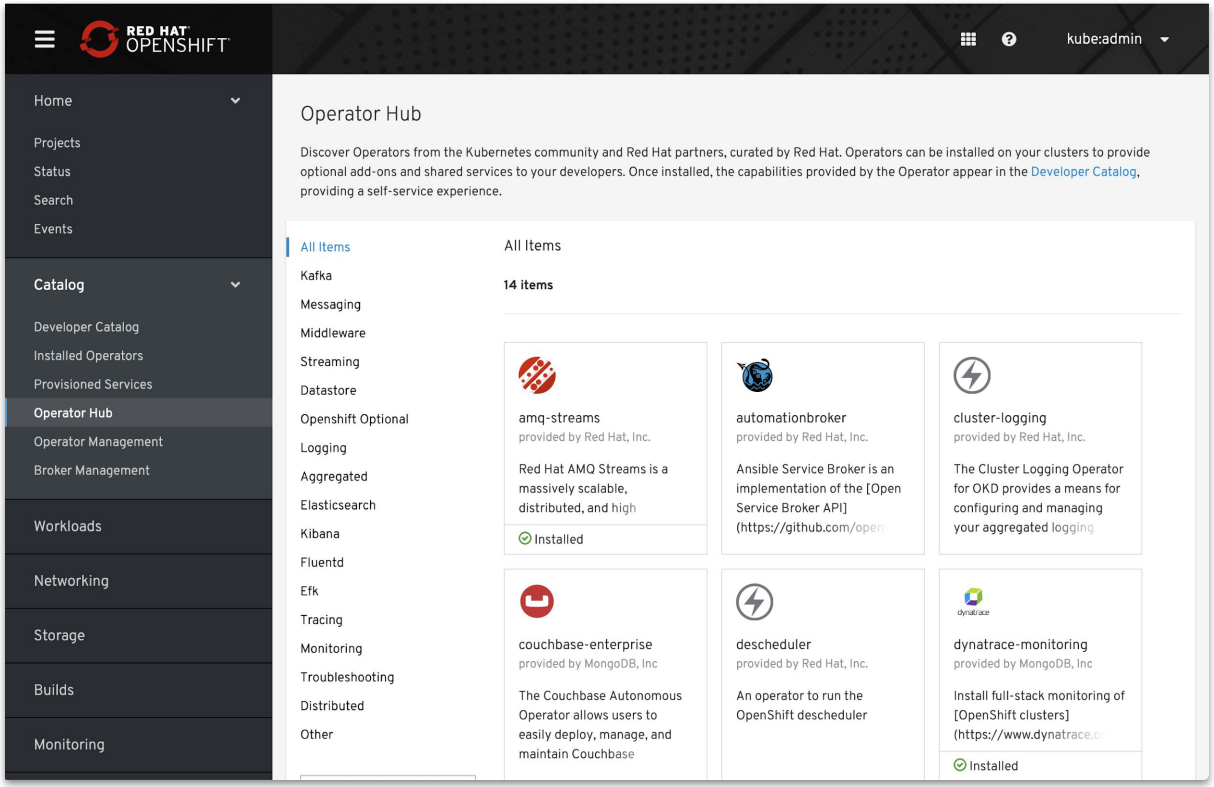
Community Operators

Red Hat Operators

Operator Hub

TYPES OF OPERATORS

Red Hat Products
ISV Partners
Community



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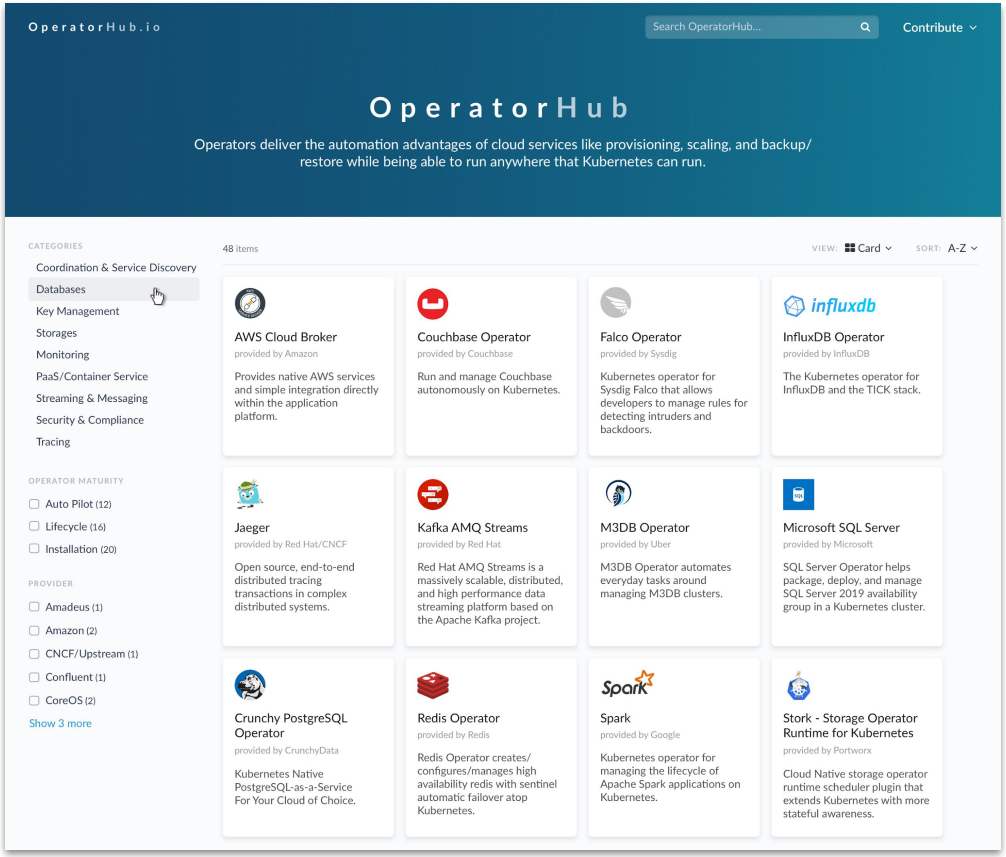
Operator Hub

TYPES OF OPERATORS

Community

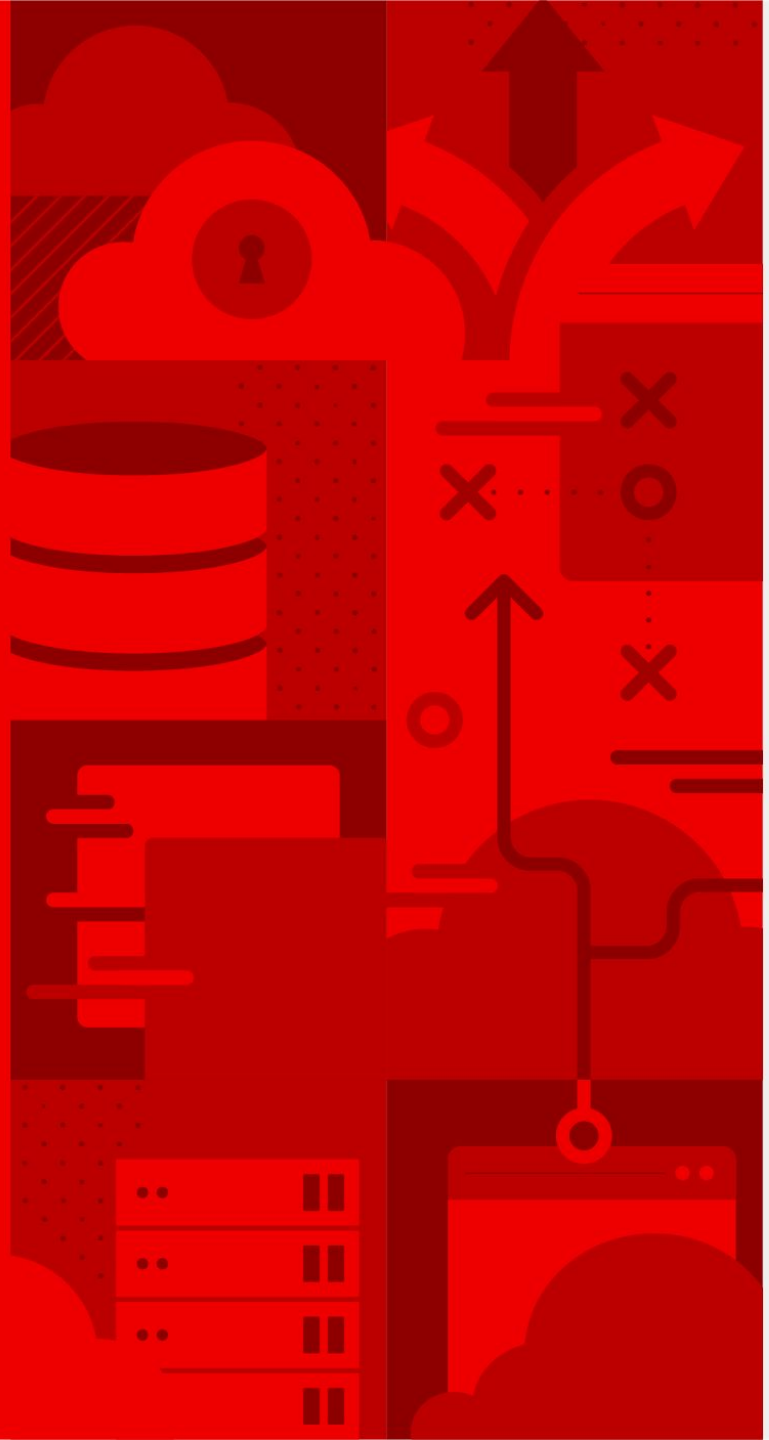


Summary

Custom Resource Definitions are your API

Choose the language that better suits your needs

Go as far as you need to (Failover, Upgrades, OLM, OperatorHub, Metering)



Do you have questions?

I know a guy who knows a guy that might know the answer...

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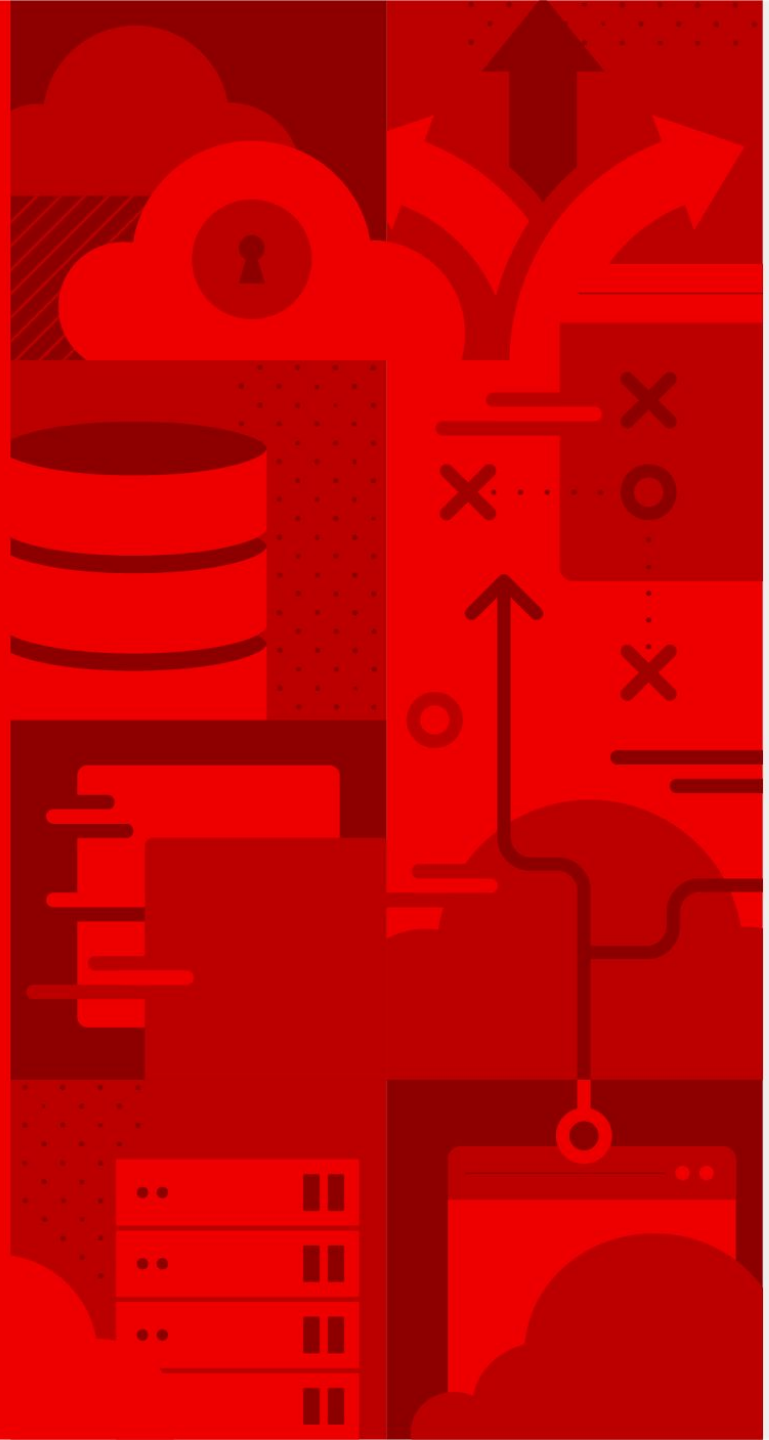

Thank you

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