

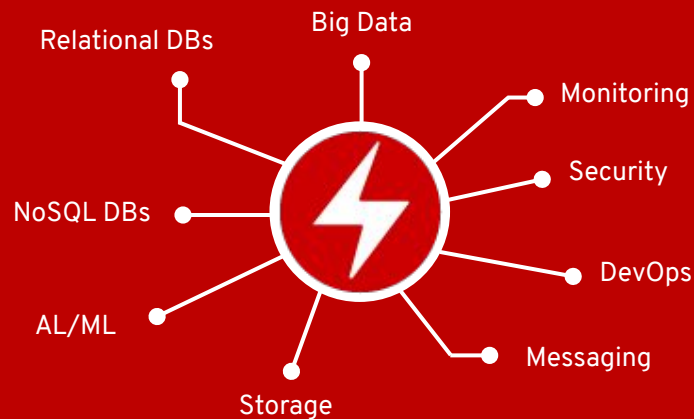


Red Hat
OpenShift

Operator Framework

A broad ecosystem of workloads

Operator-backed services allow for a
SaaS experience on your own infrastructure



Red Hat Certified Operators

DEVOPS



APM



DATA SERVICES



DATABASE



SECURITY



STORAGE



OperatorHub data sources

Requires an online cluster

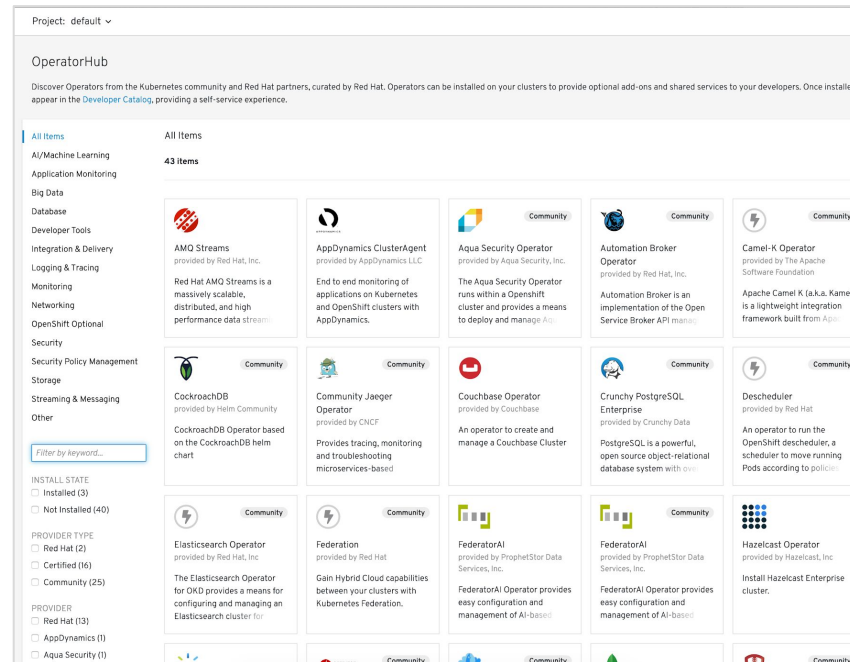
- For 4.1, the cluster must have connectivity to the internet
- Later 4.x releases will add offline capabilities

Operator Metadata

- Stored in quay.io
- Fetches channels and available versions for each Operator

Container Images

- Red Hat products and certified partners come from RHCC
- Community content comes from a variety of registries



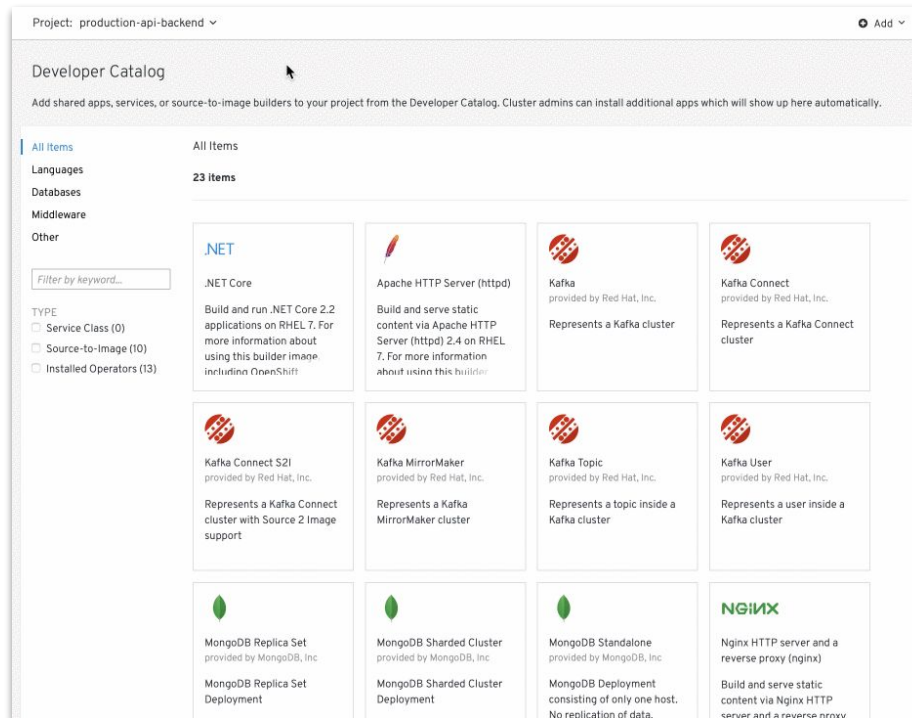
Services ready for your developers

New Developer Catalog aggregates apps

- Blended view of Operators, Templates and Broker backed services
- Operators can expose multiple CRDs. Example:
 - MongoDBReplicaSet
 - MongoDBSharded Cluster
 - MongoDBStandalone
- Developers can't see any of the admin screens

Self-service is key for productivity

- Developers with access can change settings and test out new services at any time



Operators as a First-Class Citizen

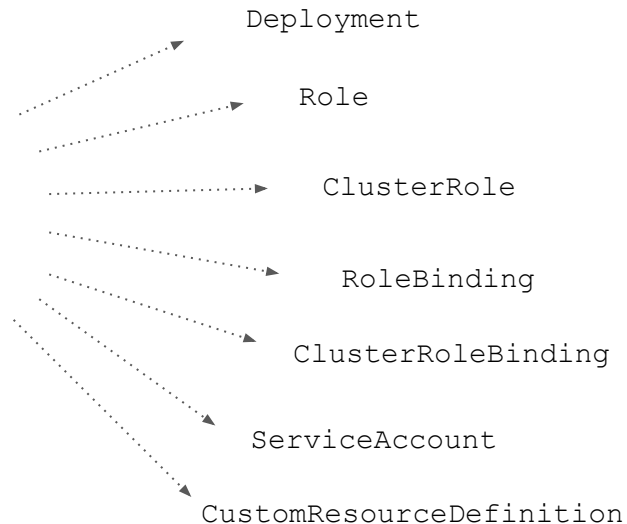


YourOperator v1.1.2
Bundle

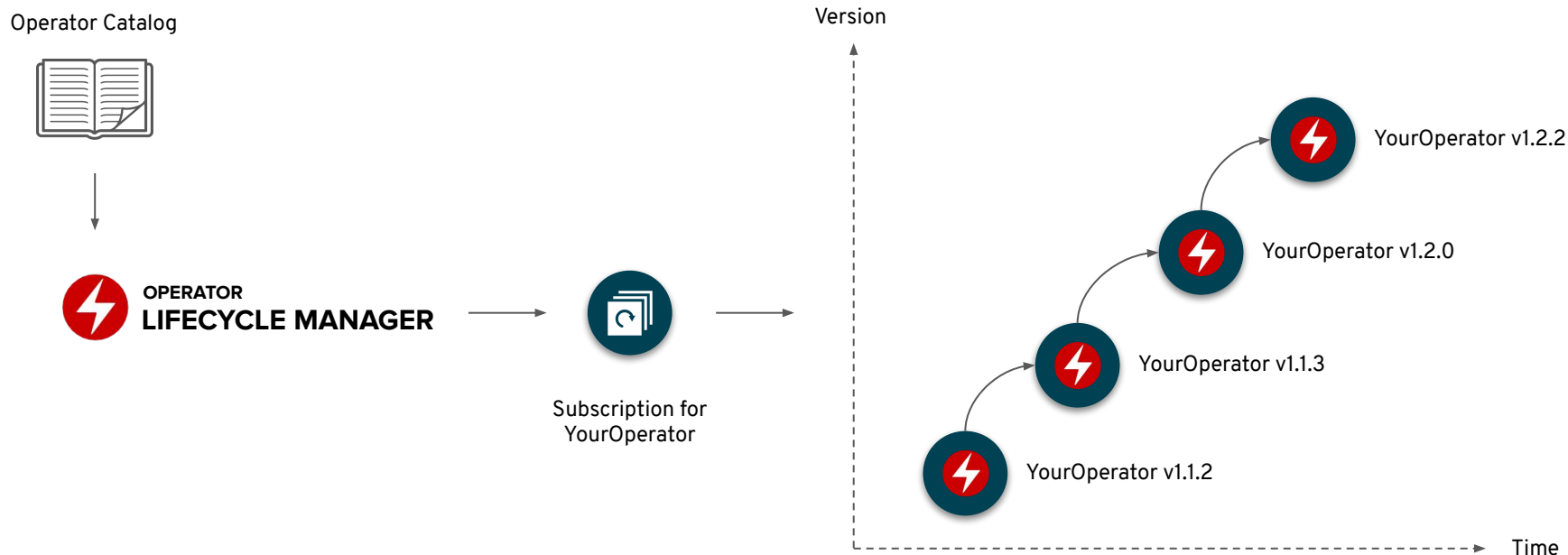


**OPERATOR
LIFECYCLE MANAGER**

Operator Deployment
Custom Resource
Definitions
RBAC
API Dependencies
Update Path
Metadata



Operator Lifecycle Management



Operator Lifecycle Management

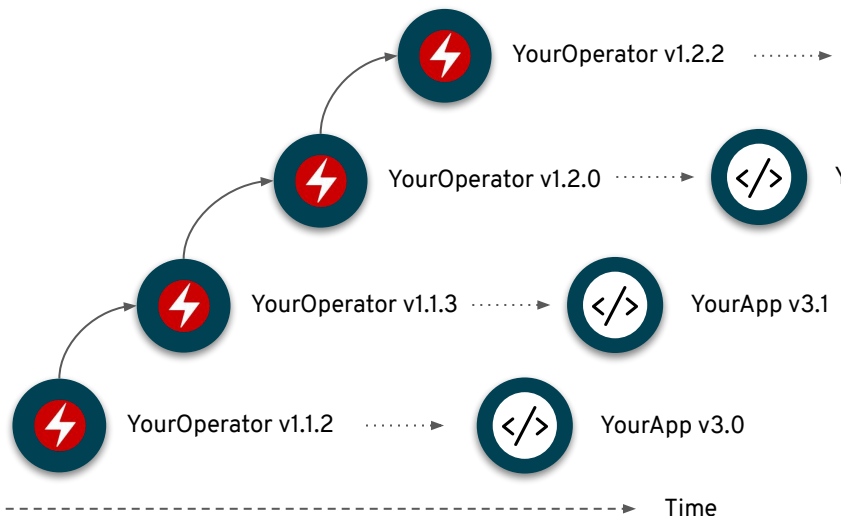
Operator Catalog



Subscription for
YourOperator



Version



Operator Upgrade in Detail

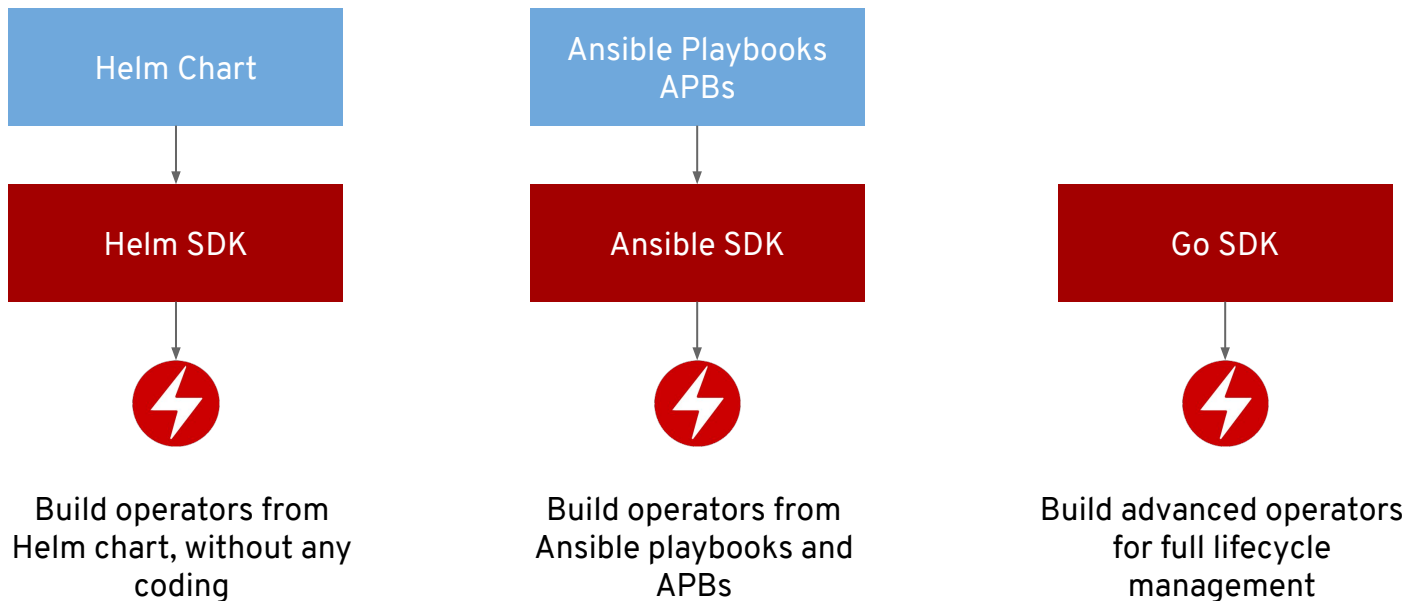
OperatorHub facilitates upgrades of installed Operators

- Manual or automatic modes can be chosen per Operator
- The Operator itself is upgraded by OLM via Deployment and a regular rolling upgrade
- The objects managed by the Operator use built in mechanisms to maintain HA
 - Deployments/StatefulSets
 - affinity/anti-affinity
 - taints/tolerations
 - PodDisruptionBudgets
- Behavior is dependent on the maturity of the Operator
- Optional cluster components like Cluster Logging are well behaved during upgrades

The screenshot displays the Red Hat OpenShift Operator Management interface. The left sidebar shows navigation options: Home, Catalog (Developer Catalog, Installed Operators), OperatorHub, Operator Management (selected), Workloads (Pods, Deployments, Deployment Configs, Stateful Sets, Secrets, Config Maps, Cron Jobs, Jobs, Daemon Sets, Replica Sets, Replication Controllers, Horizontal Pod Autoscalers), and Networking. The main content area is titled 'Operator Management' and shows 'Operator Subscriptions'. A table lists installed operators with their status, channel, and approval strategy. A tooltip highlights the 'Up to date' status for the 'amq-streams' operator.

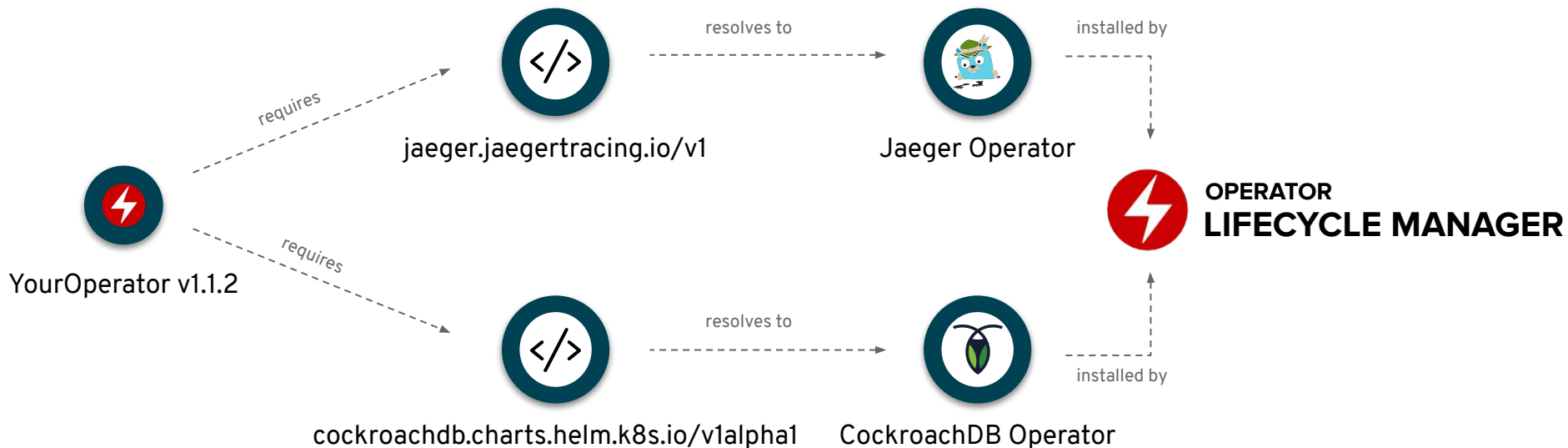
NAME	NAMESPACE	STATUS	CHANNEL	APPROVAL STRATEGY
amq-streams	openshift-operators	Up to date	stable	Automatic
cockroachdb	openshift-operators	Up to date	stable	Automatic
codeready-workspaces	codeready	Up to date	final	Automatic
couchbase-enterprise-certified	robszumski-api-backend	Up to date	preview	Automatic

Build Operators for your apps



Depend on other Operators

Operator Framework Dependency Graphs



Red Hat Middleware

Same experience as 3.x for developers

- Admins install Service Brokers via OperatorHub
- Devs consume via Developer Catalog

Transitioning to Operators

- First Operators are out
 - AMQ Streams (Kafka)
 - Fuse Online
 - CodeReady Workspaces
 - Business Automation (Tech Preview)
 - Data Grid
- More to follow in 2019
 - Red Hat Integration - July:
 - AMQ Interconnect, AMQ Broker
 - 3scale API Management
 - Apicurio API Designer
 - Business Automation - July (GA)
 - Red Hat Application Runtimes
 - MW Component Operator - July



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