



# Operator Framework

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# What is Operator Framework?

- Operator SDK
  - Simplifies building Kubernetes operators
  - Has an extensible CLI & scaffolding
  - Uses upstream controller-runtime & controller-tools
- Operator Lifecycle Manager
  - Helps to install, manage, and upgrade operators on a cluster
  - Over-the-air updates and catalogs
  - Dependency model

# Java Operators

- Operator SDK now supports generating operators in Java
- Uses Quarkus for fast, native builds
- Native Java developer feel

# Why Java Operators?

- Reach developers using most popular enterprise language
- Expand the language support of operator-sdk
  - Go, Ansible, Helm, & Java

# What are Java Operators

- java-operator-plugins scaffolds out the project
- Uses java-operator-sdk (a controller-runtime like library)
- Uses Quarkus for fast, native builds
- Native Java developer feel

# Hybrid Helm

- Helm operators get you running quickly but lack custom functionality and still have the Operator capability level of II.
- Hybrid Helm allows you to write Golang controller code in addition to the standard Helm reconciliation
- Helm plugin repository contains:
  - A library with helper logic for interacting with Helm and controller-runtime.
  - Plugin to scaffold hybrid operator that is compatible with both Helm and Go APIs.

# Phase 2 Plugins

- What is a plugin?
  - “a software component that adds a specific feature to an existing computer program” - Wikipedia
  - Extends the scaffolding of operator-sdk commands
    - init - project initialization
    - create api - scaffolds Kubernetes API
    - create webhooks - scaffolds Kubernetes webhooks

# Phases

- Phase 1
  - Made operator-sdk extensible
  - Go only; compiled in
- Phase 1.5
  - Introduces plugin bundle
  - Allows chaining of plugins
  - Still Go only



# Why Phase 2?

- Phase 2
  - Discover & run external plugin executables
  - Out of tree plugins do not have to be compiled into operator-sdk
  - No longer restricted to Go
    - Python
    - Go
    - Java
    - Insert your favorite language here

# Future Work

- External validator
  - Allows calling bundle validations from external binaries
  - Externalize operator-framework/api validations
- Support for external language plugins (e.g. python)
  - Phase 2 plugins will open up support for other languages
- File-based catalogs
  - fully plaintext-based (JSON or YAML) evolution of the previous sqlite database format that is fully backwards compatible
- Rukpak
  - a pluggable, packaging and distribution solution
  - small set of CRD APIs and controllers

# Demo

Q&A

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# How to contact us

- Slack: [#operator-sdk-dev](#), [#kubernetes-operators](#), [#olm-dev](#)
- Mailing list: [operator-framework Google Group](#)
- Discord: [#java-operator-sdk](#)
- Community page: <https://github.com/operator-framework/community/>