



KubeCon



CloudNativeCon

China 2018

# SIG Apps Introduction

Janet Kuo, Software Engineer, Google



# SIG Leads



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- Adnan Abdulhussein (@prydonius), *Bitnami*
- Kenneth Owens (@kow3ns), *Google*
- Matt Farina (@mattfarina), *Samsung SDS*



# Goals

SIG Apps covers *developing, deploying, and operating applications* on Kubernetes with a focus on the *application developer* and *application operator* experience.

- **Code, Binaries and Services**

- APIs used for running applications (e.g., Workloads API)
- Tools and documentation to aid in ecosystem tool interoperability around apps (e.g., Application CRD/Controller)
- Grandfathered in tools used to aide in development of and management of workloads (e.g., Kompose)

- **Cross-cutting and Externally Facing Processes**

- A discussion platform for solving app development and management problems
- Represent the needs and persona of application developers and operators

# SIG Apps Meetings

1 hour meeting at 9am PST every Monday

- Agenda: Intro + announcements + survey sometimes
- Demos
- Scheduled Discussion Topics
- Open discussion

# Workloads API



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- Deployment (api: apps/v1)
  - Used to implement Rolling Updates and Rollbacks for Pods managed by ReplicaSets
- ReplicaSet (api: apps/v1)
  - Used to schedule N fungible Pods
  - Useful for stateless serving workloads.
  - Implementation detail of Deployments
- ReplicationController (api: core/v1)
  - This is not the API object you are looking for!
  - Use a Deployment instead
- StatefulSet (api: apps/v1)
  - Deploys N unique, identifiable Pods with durable storage.
  - Useful for distributed systems and databases
- Job (api: batch/v1)
  - Used to schedule one or more Pods that run to completion and either succeed or fail.
- CronJob (api: batch/v1beta1)
  - Used to repetitively launch Jobs at a configurable duration.
- DaemonSet (api: apps/v1)
  - Used to schedule a Pod on a set of Nodes (potentially all)
  - Useful for cluster addons, log shippers, metrics collectors, networking plugins, DFS data nodes

# Workloads API Future Directions



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- CronJob to GA
- TTL controller for Jobs garbage collection (alpha in 1.12)
- DaemonSet to use default scheduler (beta in 1.12)
- Storage aware scheduling (stable in 1.13)
  - Integration between the volume provisioner and the scheduler will allow volume provisioning to respect scheduling predicates
- Topology aware disruption budgets
  - Allows for failure domain aware rolling updates

# Helm, Charts and Apps

- Helm: now hosted by CNCF
- Charts
  - Looking for contributors and maintainers (<https://github.com/helm/charts>)
  - Has an hour meeting every other Tuesday
  - Distributed search site instead of a central chart repository
- KubeApps
  - 1.0.0 released
- Application CRD
  - Working to define what a common extension to develop and interact with Applications on Kubernetes
  - Contributions and opinions welcome
  - <https://github.com/kubernetes-sigs/application>



# Apps Recommended Labels



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Key	Description	Example	Type
<code>app.kubernetes.io/name</code>	The name of the application	<code>mysql</code>	string
<code>app.kubernetes.io/instance</code>	A unique name identifying the instance of an application	<code>wordpress-abczy</code>	string
<code>app.kubernetes.io/version</code>	The current version of the application (e.g., a semantic version, revision hash, etc.)	<code>5.7.21</code>	string
<code>app.kubernetes.io/component</code>	The component within the architecture	<code>database</code>	string
<code>app.kubernetes.io/part-of</code>	The name of a higher level application this one is part of	<code>wordpress</code>	string
<code>app.kubernetes.io/managed-by</code>	The tool being used to manage the operation of an application	<code>helm</code>	string

# Other Ecosystem Projects

- Kompose - Translates a Docker Compose file into Kubernetes resources files
- Monocular - Web UI for Helm Chart repositories
- ChartMuseum - Helm Chart Repository with support for Amazon S3 and Google Cloud Storage
- Kedge - a deployment tool for Kubernetes artifacts by using a simplified version of the Kubernetes spec
- Metacontroller- Framework for lightweight, CRD based cluster extensions.
- audit2rbac - turns API Server audit logs into the RBAC rules
- Netsil - Kubernetes monitoring
- Draft - Makes it easy to build applications that run on Kubernetes
- Skaffold - Facilitates continuous development for Kubernetes applications
- Kubeless - A Kubernetes Native Serverless
- Many, Many, Many more ....