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才云

云原生 DevOps 平台 Cyclone 的实现

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Agenda

- DevOps Introduction
- Cyclone Overview
- Cyclone Function Modules
- Cyclone Implementation
- Caicloud Products on Cyclone
- Cyclone Roadmap

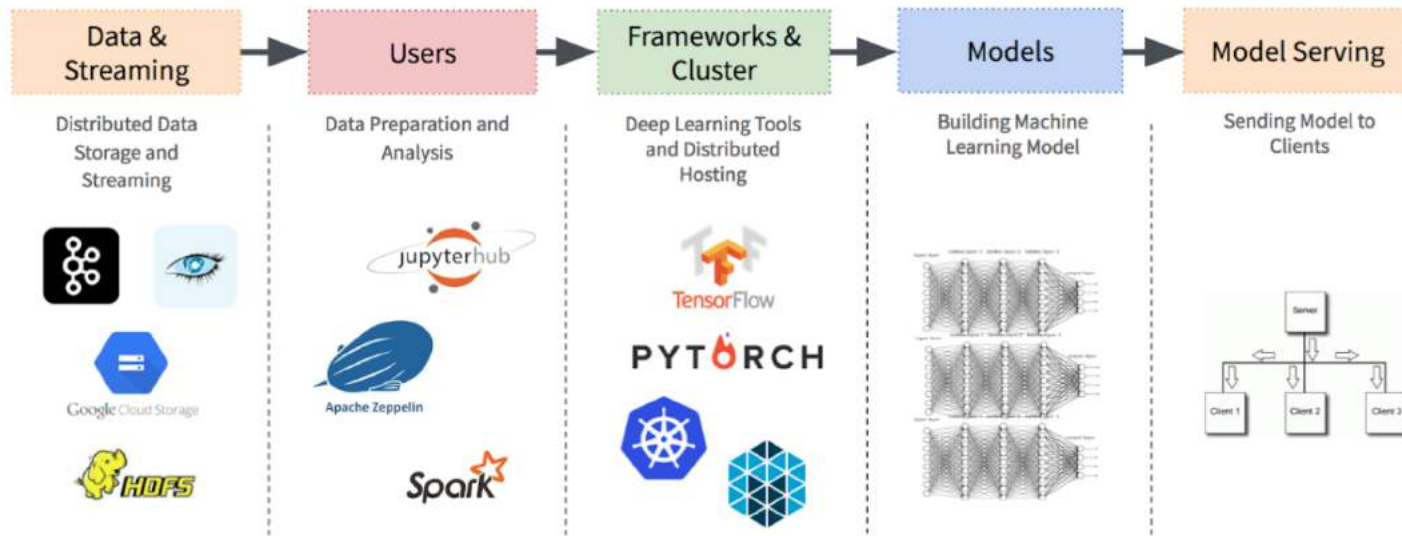


CYCLONE

DevOps is a **software development and delivery process** that **emphasizes communication and collaboration** between product management, software development, operations professionals and close **alignment with business objectives**.

– Wikipedia

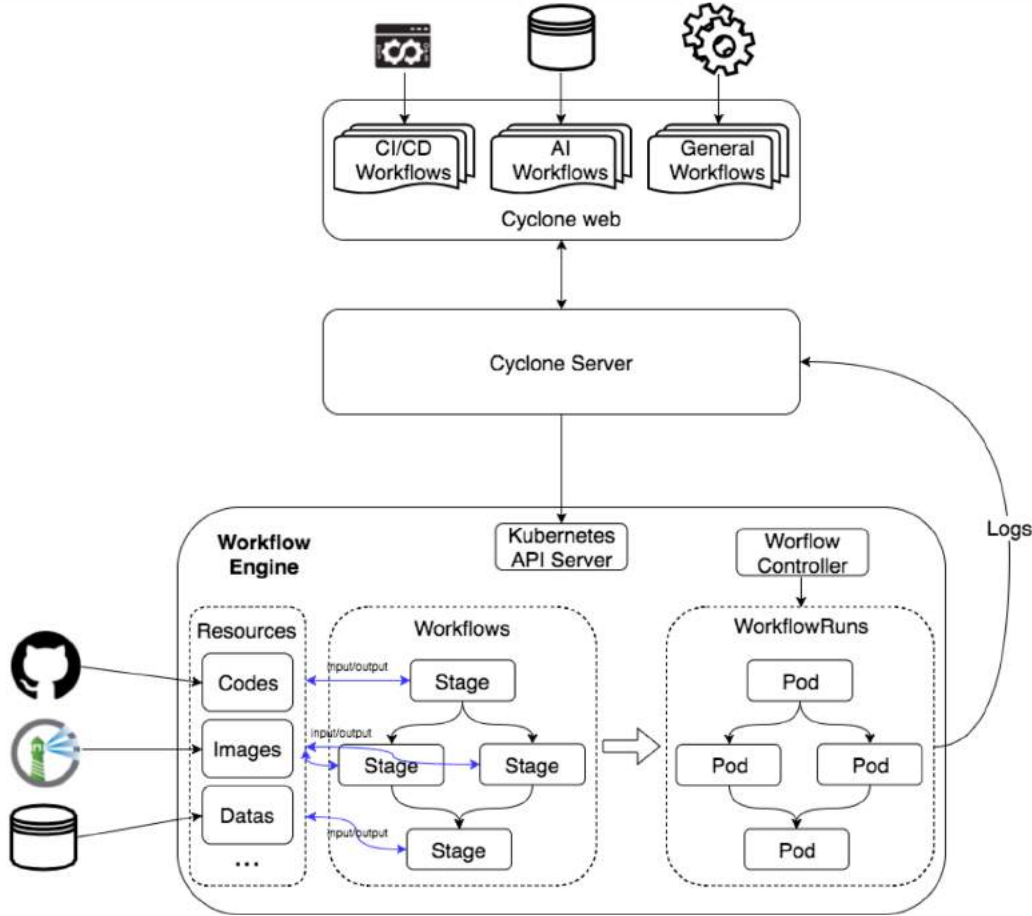




- Powerful workflow engine and end-to-end pipeline solutions implemented with native Kubernetes resources
- Key features
 - Workflow orchestration
 - Workflow execution
 - External integration
 - Multi-cluster
 - Multi-tenancy
 - Cyclone web

- Kubernetes native
- Extensible
- Simple
 - Low-level workflow engine
 - High-level workflow orchestration

Cyclone Overview – Architecture




Cyclone Web: UI of Cyclone helps users to easily use Cyclone.

Cyclone Server: API server of Cyclone provides a set of RESTful APIs to operate Cyclone resources.

Workflow Controller: Controller of Cyclone workflow engine, controls the execution of stages in workflows.

- **Stage:** Minimum executable unit for workflow, it does some work on input resources and output results.
- **Resource:** Resource is the data used by stages as input or output, such as git repository or docker images.
- **Workflow:** Executable DAG graph composed of stages.
- **WorkflowRun:** Running record of a workflow.
- **WorkflowTrigger:** Auto-trigger policy for workflow.

- Integrates with external systems for resources.
- Supported external systems
 - SCM
 - GitHub (will support private GitHub later)
 - Public and private GitLab: $\geq 8.13.6$
 - BitBucket: ≥ 5.0
 - SVN
 - Docker Registry
 - Docker hub
 - Docker registry
 - Harbor
 - Kubernetes
 - General
 - SonarQube (coming soon...)

 **CYCLONE**

[Overview](#)
[Project](#)
[Template](#)
[Workflow](#)
[Integration Center](#)

Integration Center / Add

Add external system

* Name:

Description:

* Type:

Code origin

* Type:

Server address:

* Auth Type:

* Username:

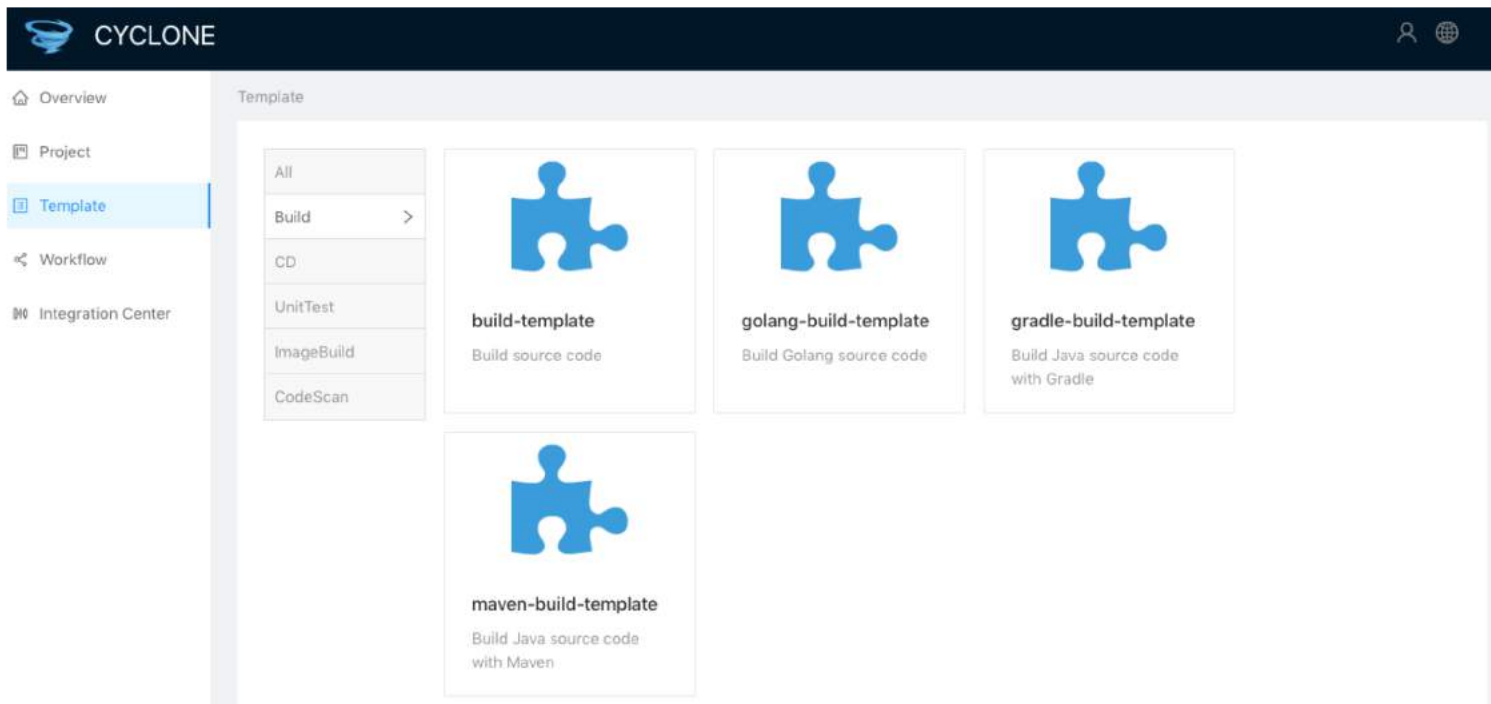
* password:

- Manages a group of workflows and their resources and stages.

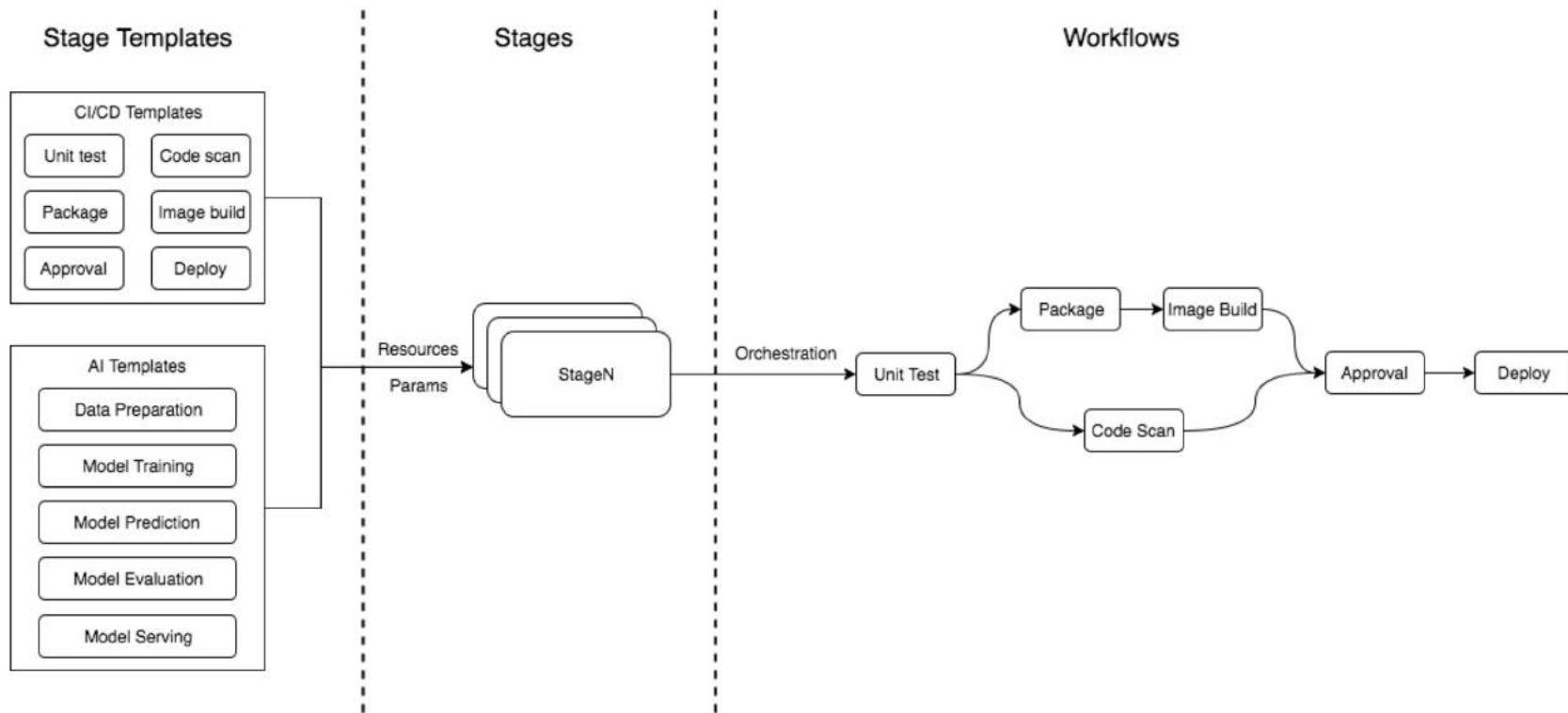
The screenshot displays the Cyclone web interface. At the top, there is a dark header with the Cyclone logo and the word 'CYCLONE'. Below the header, a navigation menu on the left includes 'Overview', 'Project' (which is highlighted), 'Template', 'Workflow', and 'Integration Center'. The main content area shows the 'Project / project2' page. It features a search bar with the text 'project2' and a dropdown menu. Below this, the 'Creation time' is listed as '2019-05-07 11:39:54'. There are three tabs: 'Workflow' (selected), 'Resource', and 'Stage'. An 'Add' button is visible. A table lists the workflows with columns for Name, Recent version, Creator, Creation time, and Action.

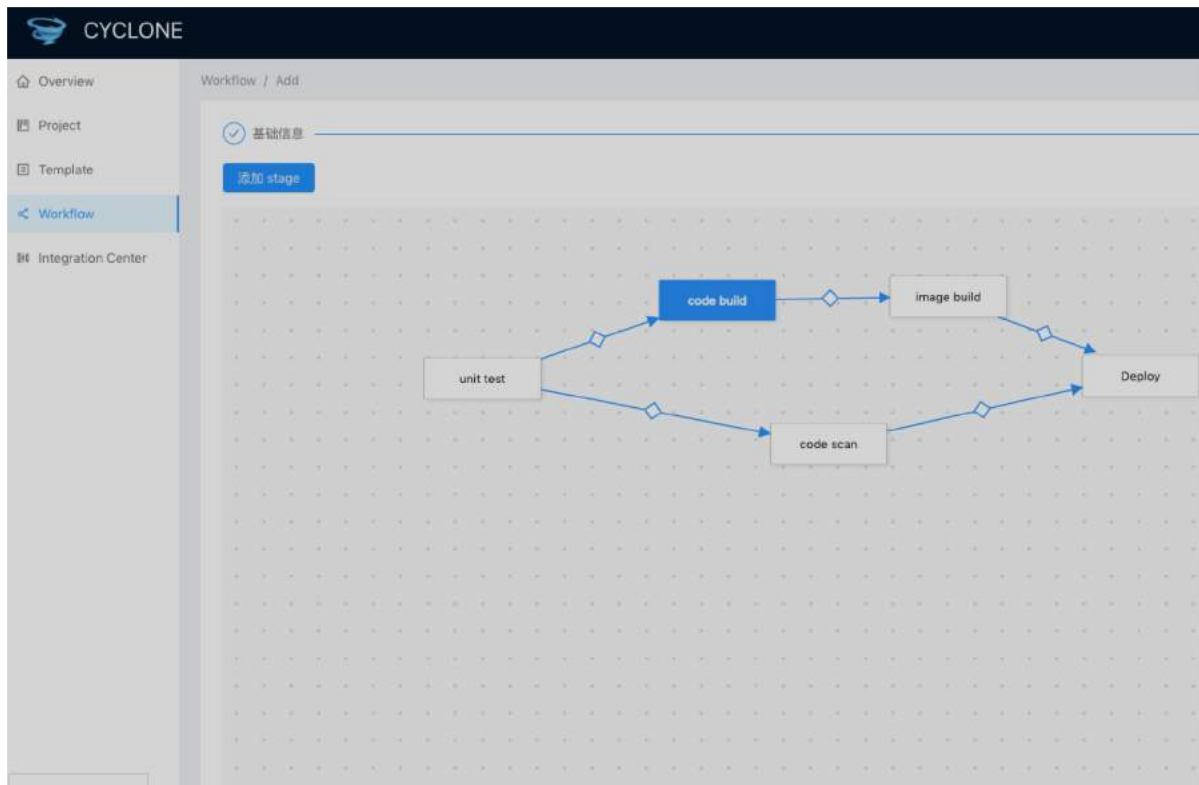
Name	Recent version	Creator	Creation time	Action
111	v1	admin	2019-05-08 11:39:54	⋮
fff	v2.1.0	robin	2019-05-08 10:05:14	⋮
qme	v0.1.0	admin	2019-05-08 08:15:20	⋮

- Manages built-in stage templates and customized templates.



- Resource is the data used by stages as input or output.
- Each type of resource needs a resolver to pull or push it.
- Resource types
 - Built-in
 - Git
 - Image
 - KV
 - SVN
 - General: Allow users to implement resolvers for customized resources.
- Implementation
 - Use PV to share resources between stages for one workflow running.
 - Use lock to ensure shared resources to be pulled one time.





Basic Drawer

Stage creation:

* Name:

Input

Resource:

Config

* Image:

* ENTRYPOINT:

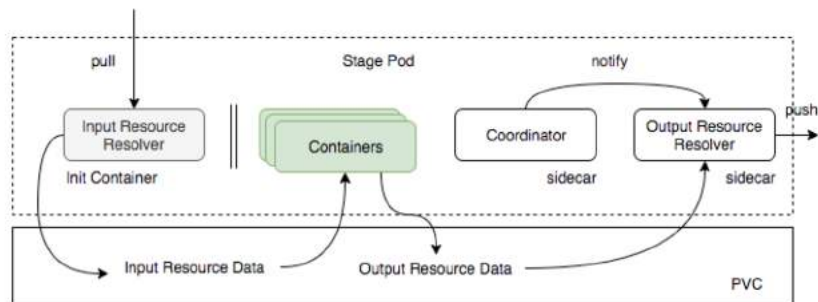
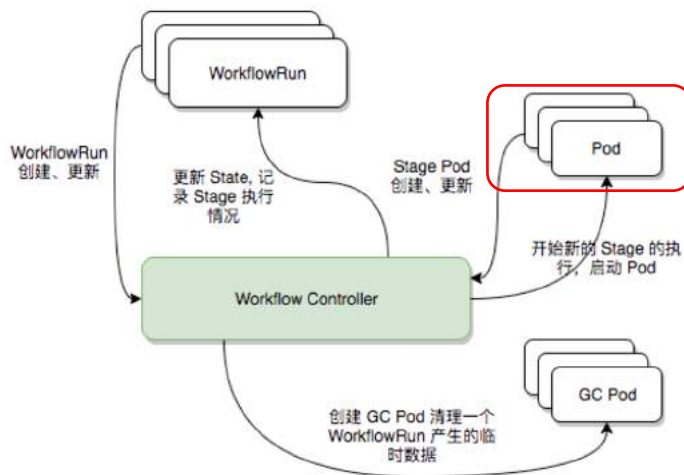
* COMMAND:

Env:

Output

Resource:

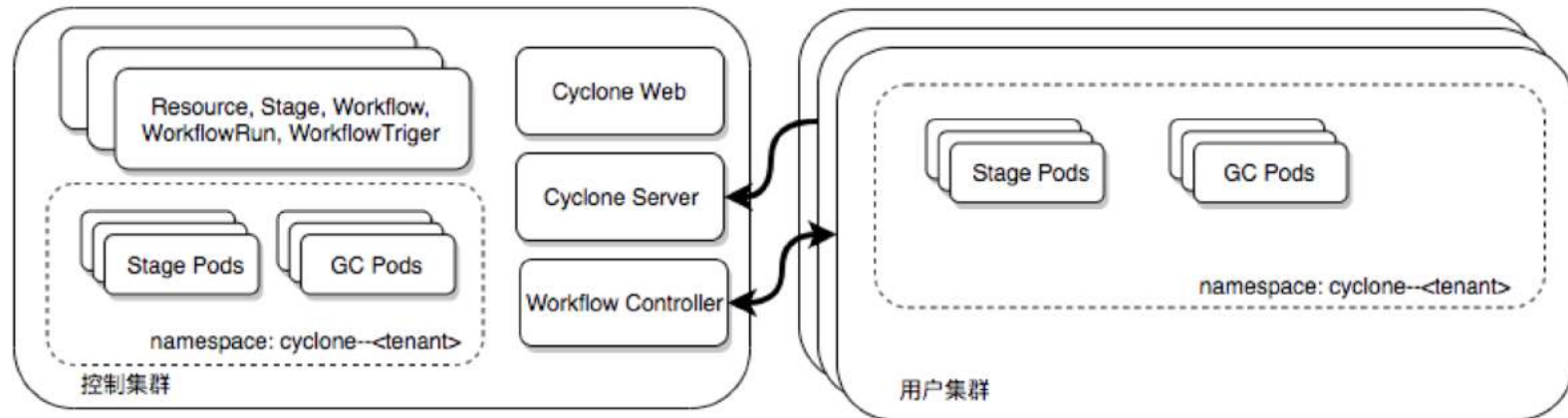
artifacts:

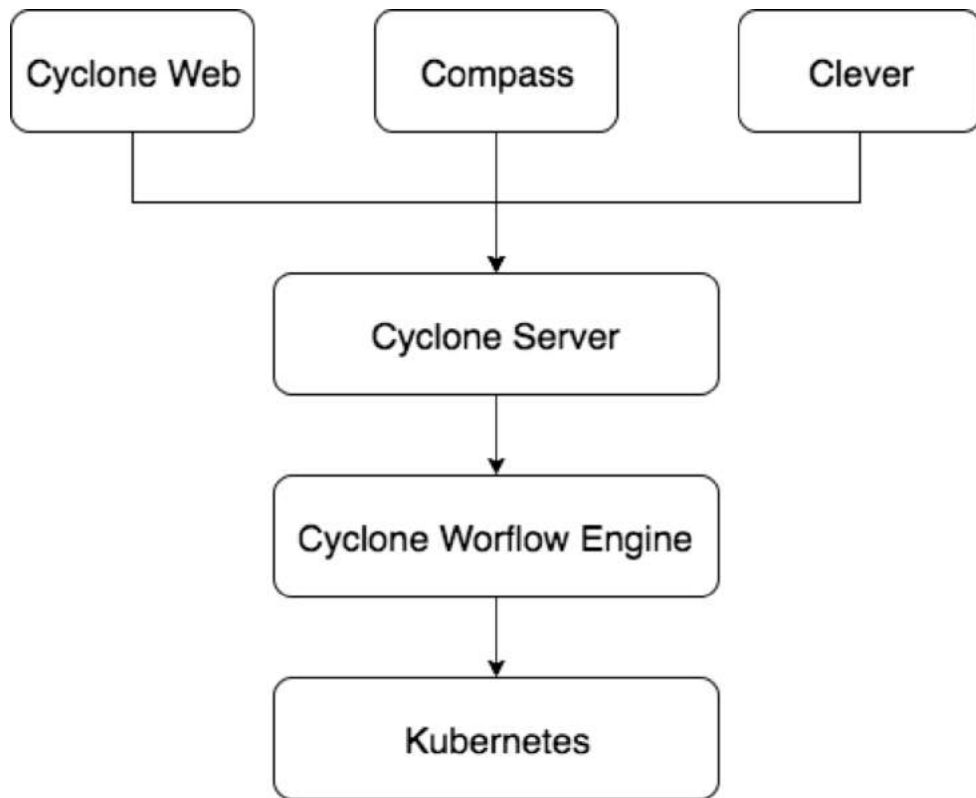


- **Init Container:** Prepares input resources
- **Workload Containers:** Do functional work
- **Sidecars**
 - **Coordinator:** Collects logs and artifacts, notify resolvers
 - **Resource Resolver:** Handles output resources

- Based on Kubernetes namespace
- Namespace scope CRDs

- One control cluster
 - Full Cyclone components
 - Store all CRDs
 - Schedule stage pods in both controller cluster and user clusters
- Multiple user clusters
 - Run stage pods for workflowrun





← 流水线 / 更新

✓ 基础信息 → 2 流水线任务 → 3 设置 → ✓ 预览



← 工程项目 / flower-demo

工作空间: yum-ai-lab ▾

组件库

装配箱

上线列表

新增



training-dist

admin

2019-01-14 18:54:10



gen-model

admin

2019-01-14 21:08:50



serving

admin

2019-01-14 21:15:54



gen-tfrecord

admin

2019-01-14 21:22:04

← 工程项目 / flower-demo

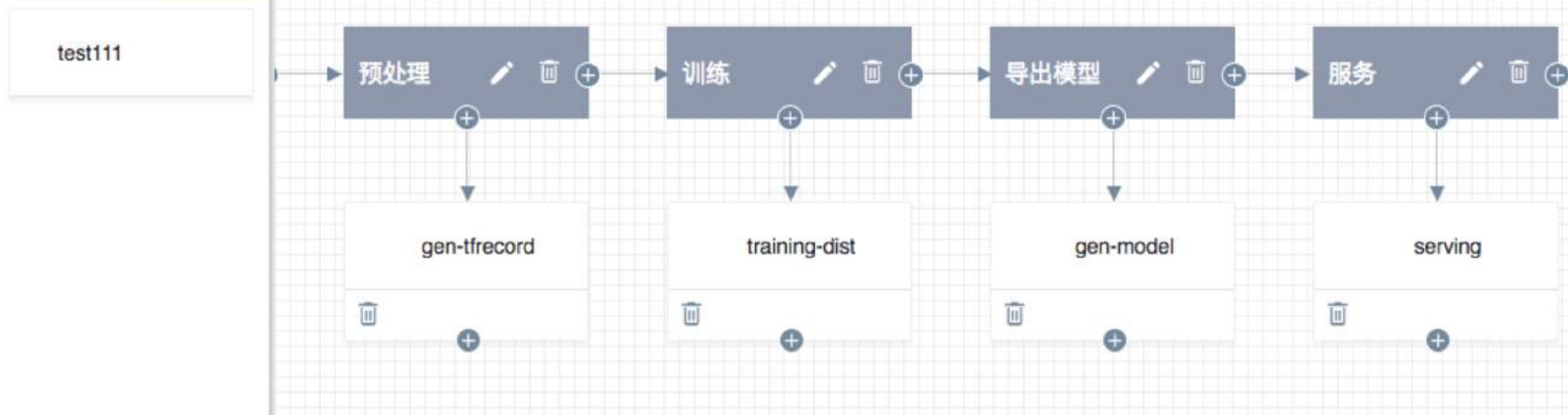
工作空间: yum-ai-lab ▾

快速上

组件库

装配箱

上线列表



- User system: User management, auth, auditing, LDAP, ...
- Third-party Storage: Amazon S3, Aliyun OSS, ...
- Stage and workflow templates
- Improve Cyclone web
- Cyclone CLI
- Cyclone YAML



<https://github.com/caicloud/cyclone>

<https://cyclone.dev/>



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谢谢大家！