CONTAINER & AI PLATFORM ON KUBERNETES

How to Help Enterprises to Embrace Digital and Intelligent Transformation

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Agenda

Building cluster(s) & managing resources - 73s
- Behind the scene
  - Multi-clusters & registries
  - Multi-tenancies & integration with legacy facilities
- Running & building applications
  - Rudder: application orchestration
  - Cyclone: continuous integration & delivery

Running AI & ML workloads - 58s
- Behind the scene
  - Using Kubeflow
  - Beyond Kubeflow
BUILDING CLUSTER(S) & MANAGING RESOURCES
Demo Length: 73s

Compass 致力于成为更快速、轻量、简洁的容器云平台。
MULTI-CLUSTERS & REGISTRIES

• Why
  • Isolation & Security
  • Fault tolerance, hybrid cloud
  • Diversity

• How
  • K8s: 1 control cluster, multiple user clusters
  • Registry: 1 default service, multiple integrated services
MANAGING MACHINES & NODES

- Cloud provider
- Custom resource
- Ansible
MANAGING REGISTRIES

- Cargo: a production-grade registry solution based on
- HA deployments and maintenance
- Enhanced “token service” for multi-tenancies & permission integration
- Rule-based replication management
- More features for enterprises …
INTEGRATION WITH OPENSTACK

• A real enterprise use case: to migrate from legacy facilities

• Concepts & resources
  • Tenant v.s. Project
  • Namespace v.s. Network (Neutron)
  • Service/Ingress v.s. LBaaS (Neutron)

• openstack/kuryr-kubernetes
RUNNING & BUILDING APPLICATIONS
• Above k8s workloads
  • Grouped objects and overall status
  • Re-use YAML
  • Versioning
  • Dependencies
• Helm is great but …

Typical enterprise application
CAICLOUD/RUDDER

An application package orchestration runtime system based on k8s controller pattern.

Security & Extensibility: benefits from k8s controller pattern.
Readability: track all k8s resource status.
Versioning: rollback to history easily.

- 2 CRDs: Release, Release History
- 1 Controller: Rudder aka Release Controller
- Open Source
  - [https://github.com/caicloud/rudder](https://github.com/caicloud/rudder)
  - [https://github.com/caicloud/canary-release](https://github.com/caicloud/canary-release)
  - [https://github.com/caicloud/charts](https://github.com/caicloud/charts)
  - [https://github.com/caicloud/helm-registry](https://github.com/caicloud/helm-registry)
BUILDING APPLICATIONS

• Automation is the key
• Developer
• QA
• SRE

• We have many choices but …

Typical CI/CD flow
CAICLOUD/CYCLONE

A cloud native CI/CD platform built for container workflow.

Design: cloud native (k8s native).
Performance: optimized for enterprise.
Extensibility: AI workflow.

- Open Source
  - https://github.com/caicloud/cyclone
RUNNING AI & ML WORKLOADS
您可以在线进行代码开发及调试
USING KUBEFLOW

• Co-founder of the community
• kubeflow/tf-operator
  • Define TFJob spec (CRD)
  • Track TensorFlow job status
  • Support distributed TensorFlow jobs
BEYOND KUBEFLOW

• Production-grade resource management
• Workspace isolation: data, models, environments, workloads
• Full-stack AI workflow in both exploration phase and production phase
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