



KubeCon



CloudNativeCon

Europe 2018

CNCF Cross-cloud CI

Project Intro

(beta)



Project Intro



KubeCon



CloudNativeCon

Europe 2018

- **Who, What, Why**
- **Demo**
- **Technology Overview**
- **Timeline & Events**
- **Q&A**



KubeCon



CloudNativeCon

Europe 2018

Who, What, Why

Meet the Cross-cloud CI Team



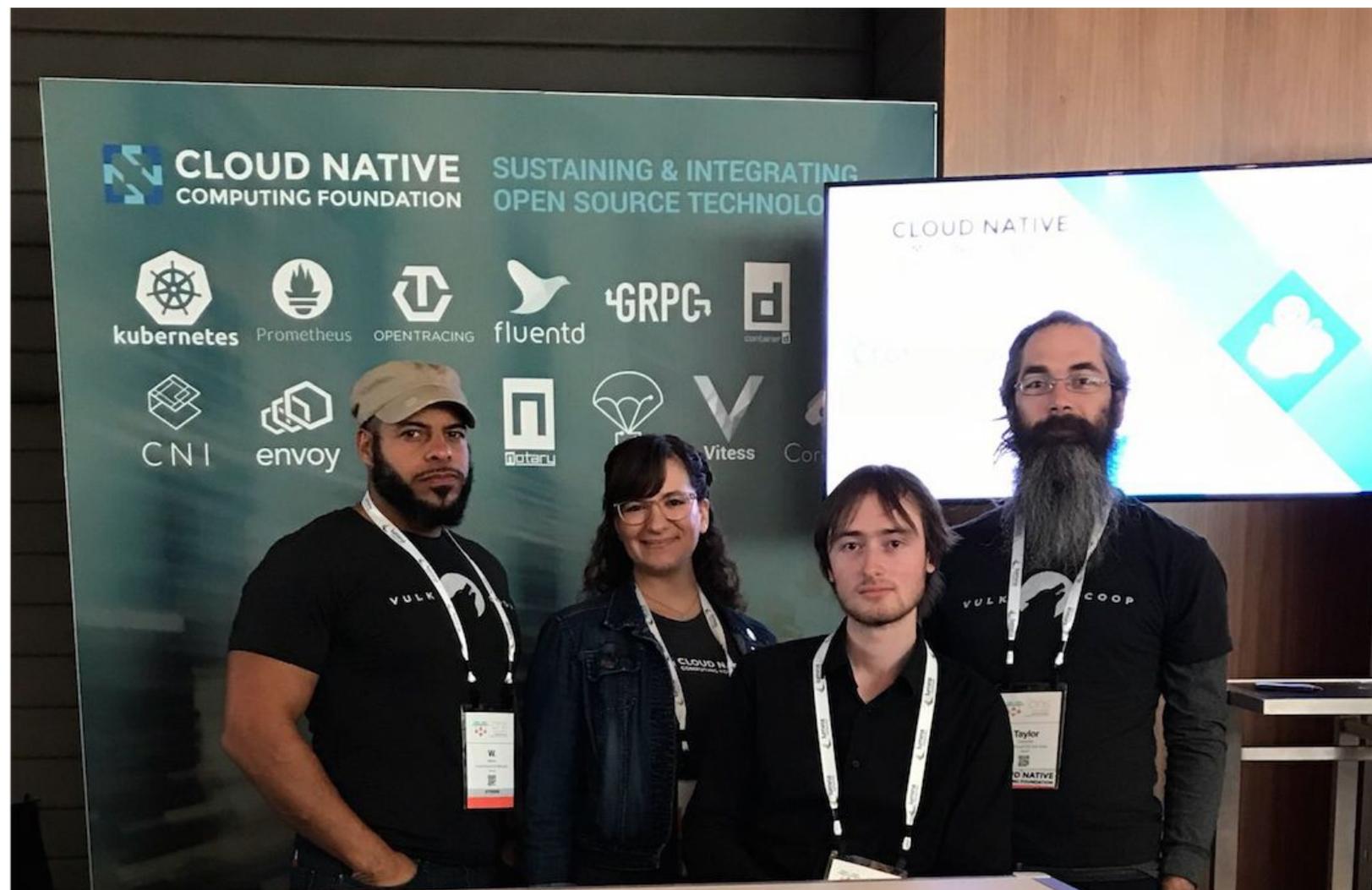
KubeCon



CloudNativeCon

Europe 2018

- **W. Watson**
[@wavell](#)
- **Lucina Stricko**
[@lixuna](#)
- **Denver Williams**
[@denverwilliams](#)
- **Taylor Carpenter**
[@taylor](#)
- **Joshua Smith***
[@nupejosh](#)
- **Robert Siekmann***
[@rsiekmann](#)



Cross-cloud CI Intro



KubeCon



CloudNativeCon

Europe 2018

Why? The CNCF ecosystem is large, diverse and continues to grow. CNCF would like to ensure cross-project interoperability and cross-cloud deployments of all cloud native technologies and show the daily status of builds and deployments on a status dashboard.

Cross-cloud CI Intro



KubeCon



CloudNativeCon

Europe 2018

What? The Cross-cloud CI project (beta) consists of a cross-cloud testing system, status repository server and a dashboard.

The cross-cloud testing system has 3 components (build, cross-cloud, cross-project) that continually **validate the interoperability of each CNCF project for any commit on stable and head across all supported cloud providers.**

The cross-cloud testing system can reuse existing artifacts from a project's preferred CI system or generate new build artifacts. The status repository server collects the test results and the dashboard displays them.

Goal: to target all CNCF projects



Europe 2018

Graduated



Kubernetes
Orchestration

Incubating



Prometheus
Monitoring



OpenTracing
Distributed Tracing API



Fluentd
Logging



gRPC
Remote Procedure Call



containerd
Container Runtime



rkt
Container Runtime



CNI
Networking API



Envoy
Service Mesh



Jaeger
Distributed Tracing



Notary
Security



TUF
Software Update Spec



Vitess
Storage



Linkerd
Service Mesh



Rook
Storage



SPIFFE
Identity Spec



SPIRE
Identity



CoreDNS
Service Discovery



NATS
Messaging



Open Policy Agent
Policy

Goal: to target non-CNCF projects



KubeCon



CloudNativeCon

Europe 2018

Implemented



Goal: to target public, bare metal & private clouds



KubeCon



CloudNativeCon

Europe 2018

aws



Azure



Google Cloud



IBM Cloud

openstack.

ORACLE®

packet

+ arm

vmware®



HUAWEI



Alibaba Cloud



KubeCon



CloudNativeCon

Europe 2018

Demo

Live Demo: Testing System + Status Dashboard



KubeCon



CloudNativeCon

Europe 2018

On Demo Environment:

- Pre-Demo: Builds and cloud provisioning were run in advance
 - Builds for all projects currently take 15-30 minutes
 - Kubernetes provisioning of all clouds currently takes 15-30 minutes
- Live Demo:
 - Start app deployment of all active projects to the provisioned clouds
 - Gitlab App Deploy Pipeline View
 - Dashboard showing app deployments

CI Status Dashboard Overview



KubeCon



CloudNativeCon

Europe 2018

CI Dashboard Overview:

- Overview of cncf.ci (beta)
 - Shows status of 3 pipeline stages: Build, Provision and App Deployments
 - Refreshes at 3:00am Eastern every day
 - Supports dynamically adding/removing active clouds and projects
 - Clicking on Build status badge opens CI system build job URL
 - Clicking on Release Name opens project's GitHub commit URL
 - Clicking on Deployment status badge opens "provisioning/app-deploy" job URL

Testing System Overview



KubeCon



CloudNativeCon

Europe 2018

- **Build Pipeline per project** (optional, can use project's build artifacts)
- **Cloud Provisioning Pipeline** (cross-cloud)
- **App Deployment Pipeline** (cross-project)

Build Pipeline Stage



KubeCon



CloudNativeCon

Europe 2018

1. **Build:** Compile binaries and e2e tests
2. **Package:** Create containers, create artifact pinning config and push to registry
3. **Update-Dashboard:** Update build status badges

Build

✓ compile

Package

✓ container

Update-Dashboard

✓ Dashboard

Cloud Provisioning Pipeline Stage



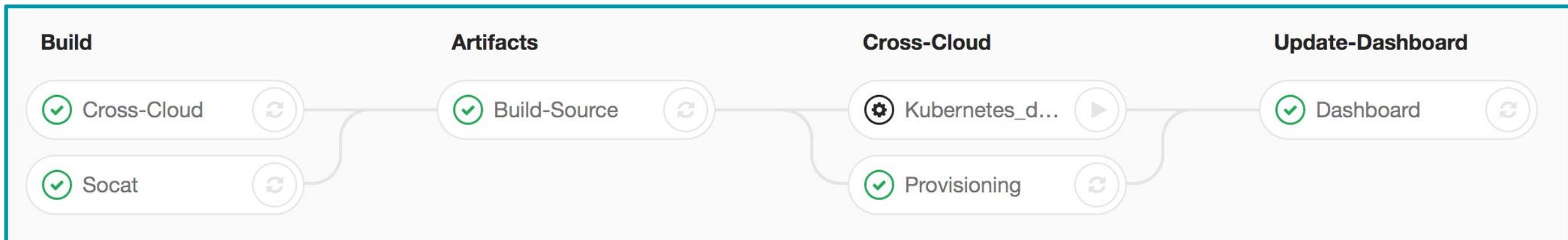
KubeCon



CloudNativeCon

Europe 2018

1. **Build:** Prepare provisioning software from the cross-cloud project
2. **Artifacts:** Collect K8s artifact pinings from the previous K8s builds
3. **Cross-Cloud:** Deploy K8s onto each cloud using cross-cloud provisioner
4. **Update-Dashboard:** Update deployment badges



App Deployment Pipeline Stage



KubeCon



CloudNativeCon

Europe 2018

1. **Artifacts:** Collect project artifact pinnings from the previous build stages
2. **Cross-Project:** Use Helm charts to deploy each project
3. **End-to-End:** Run e2e tests for each project
4. **Dashboard-Update:** Update deployment status badges

Artifacts

✓ Build-Source

Cross-Project

✓ App-Deploy

End-to-End

✓ e2e

Dashboard-Update

✓ Dashboard



KubeCon



CloudNativeCon

Europe 2018

Technology Overview

CI System Technology Overview



KubeCon



CloudNativeCon

Europe 2018

- **Unified CI/CD platform:** GitLab
- **Cross-cloud provisioning:** Terraform, Cloud-init, and per cloud K8s configuration
- **App deployments:** K8s manifest management with Helm
- **E2e tests:** Custom containers + Helm
- **Automated builds and deployments:** Git + per project yaml configuration

Dashboard Technology Overview



KubeCon



CloudNativeCon

Europe 2018

- **Frontend:** Vue.js
- **Status repository:** Elixir and Erlang
- **Automated builds and deployments:** Git + per project yaml configuration



KubeCon



CloudNativeCon

Europe 2018

Timeline

Cross-cloud CI Project Timeline



KubeCon



CloudNativeCon

Europe 2018

Phase 1:

- Create CI Platform

Phase 2:

- Update CI Platform + Create Status Dashboard, cncf.ci



What's next for Cross-cloud CI?



KubeCon



CloudNativeCon

Europe 2018

Add New Projects:

- Envoy
- Jaeger
- Notary
- Vitess

What's next for Cross-cloud CI?



KubeCon



CloudNativeCon

Europe 2018

Add New Clouds:

- Oracle
- Huawei
- Alibaba Cloud
- Packet + ARM

What's next for Cross-cloud CI?



KubeCon



CloudNativeCon

Europe 2018

Add New Features:

- Automate project release updates
- API for history of builds, deployments and end-to-end tests
- Rollback to previous working release
- New screens TBD: Project, Deployments, etc

What's next for Cross-cloud CI?



KubeCon



CloudNativeCon

Europe 2018

Cross-Group Collaboration:

- **OpenCI Community**
 - **Contributing to Collaborative Whitepaper**
- **OPNfv collaboration**
- **Prometheus end-to-end tests**
- **CoreDNS end-to-end tests**

Upcoming Events



KubeCon



CloudNativeCon

Europe 2018

- **Deep Dive for Cross-cloud**
 - **Day: Tomorrow, May 4th, 2018**
 - **Time: 11:10 - 11:45am CEST**
 - **Location: B4-M2/4**

- **CI WG Public Meetings**
 - **Day: 4th Tuesday of month**
 - **Time: 8:00am Pacific Time**
 - **Location: <https://zoom.us>**



KubeCon



CloudNativeCon

Europe 2018

Q&A

How to Collaborate



KubeCon



CloudNativeCon

Europe 2018

- **Attend CI WG meetings:**
 - <https://github.com/cncf/wg-ci>
- **Post to the CI Public Discussion Group:**
 - cncf-ci-public@lists.cncf.io
- **Please subscribe to the CNCF CI public mailing list:**
 - <https://lists.cncf.io/g/cncf-ci-public>
- **Create issues on GitHub:**
 - <https://github.com/crosscloudci/cross-cloud/issues>

Connect with Cross-cloud CI

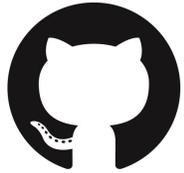


KubeCon



CloudNativeCon

Europe 2018



@crosscloudci



@crosscloudci



crosscloudci@vulk.coop

Thank you



KubeCon



CloudNativeCon

Europe 2018



Today's Demo Prepared by:

denver@debian.nz

lucina@vulk.coop

taylor@vulk.coop

watson@vulk.coop