KubeCon
CloudNativeCon
North America 2018
CNCF Cross-cloud CI
Deep Dive

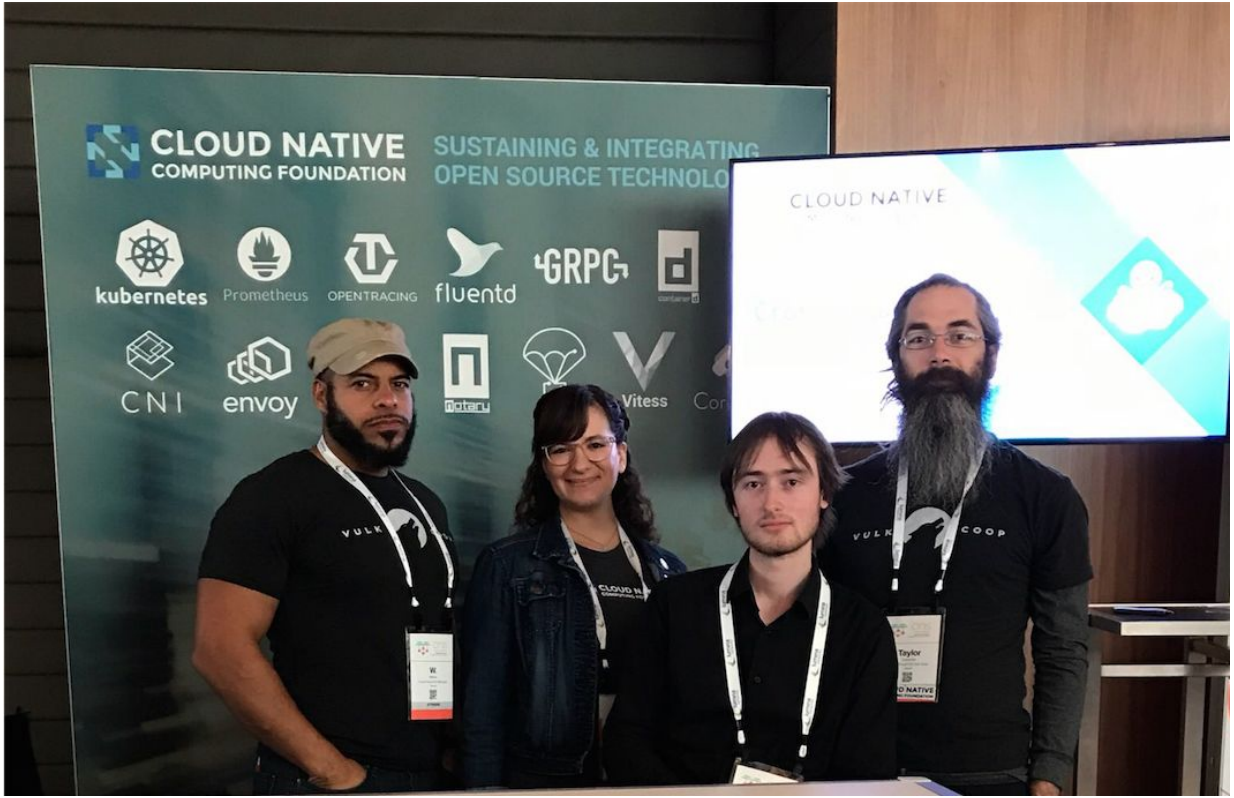
Agenda

- Who, What, Why
- What is Cross-cloud CI?
- Code review: Using Cross-cloud with CNF Project
- Lessons Learned
- How to collaborate
- Q/A

Meet the Cross-cloud Team

KubeCon | CloudNativeCon
North America 2018

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



Cross-cloud CI Intro

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

What? The Cross-cloud CI project 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 CNCF projects

KubeCon | CloudNativeCon
North America 2018

Graduated

- kubernetes — Orchestration
- Prometheus — Monitoring
- OPENTRACING — Distributed Tracing API
- fluentd — Logging
- GRPC — Remote Procedure Call
- TUF — Software Update Spec
- notary — Security
- Vitess — Storage

Incubating

- container — Container Runtime
- rkt — Container Runtime
- CNI — Networking API
- envoy — Service Mesh
- JAEGER — Distributed Tracing
- CoreDNS — Service Discovery
- NATS — Messaging
- LINKERD — Service Mesh
- HELM — Package Management
- ROOK — Storage
- HARBOR — Registry

SANDBOX

- spiffe — Identity Spec
- SPIRE — Identity
- Open Policy Agent — Policy
- cloudevents — Serverless
- TELEPRESENCE — Tooling
- OPENMETRICS — Metrics Spec
- KV — Distributed K/V
- cortex — Monitoring
- Buildpacks.io — Packaging Spec
- Falco — Container Security
- Dragonfly — Image Distribution

Goal: to target non-CNCF projects

Implemented

Goal: to target public, bare metal & private clouds

CNCF CI Platform Timeline

CLOUD NATIVE
COMPUTING FOUNDATION

- Feb 28, 2017: CI Platform started
- Jan 26, 2018: v.1.0.0 Dashboard released
- Mar 20, 2018: v1.2.0 included ONAP
- Sept 7, 2018: v1.5.0 included Envoy
- Oct 31, 2018: v1.6.0 included OCI

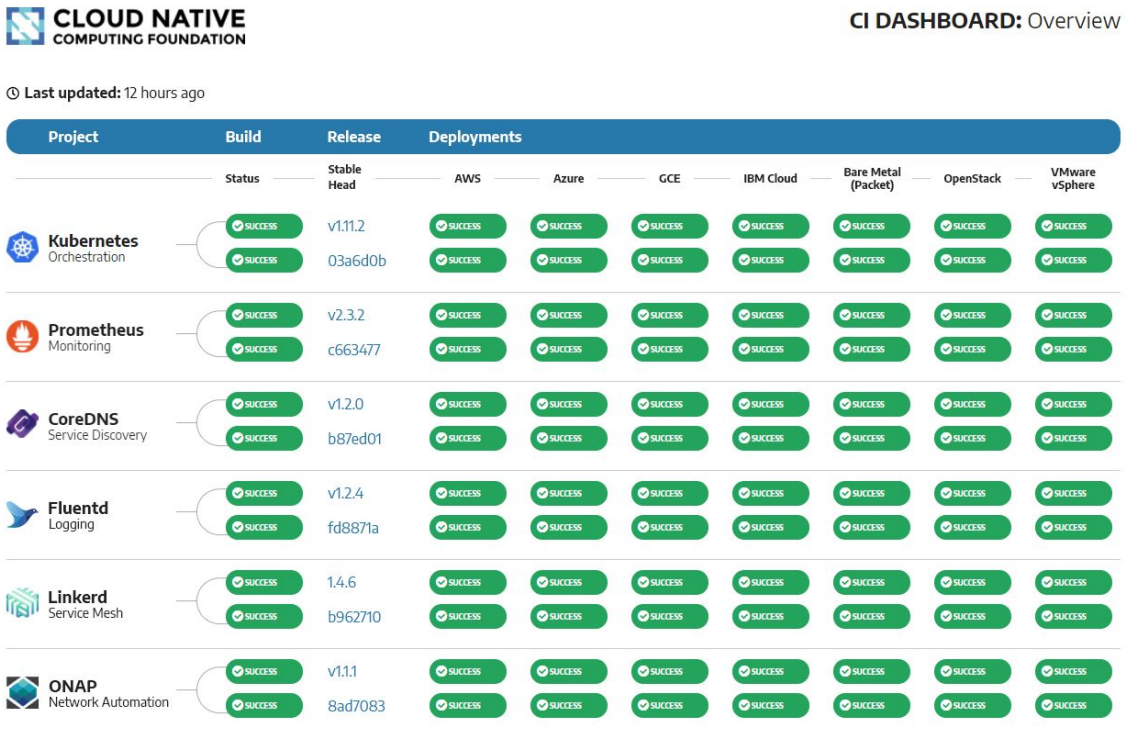
Quick Intro to CNCF Cross-cloud CI (cncf.ci)

CI Status Dashboard Overview

CI Dashboard Overview:

- Overview of cncf.ci
  - Shows status of 3 pipeline stages: Build, Provision and App Deployments
  - Refreshes at 3:00am Eastern Time 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

CI Dashboard at cncf.ci



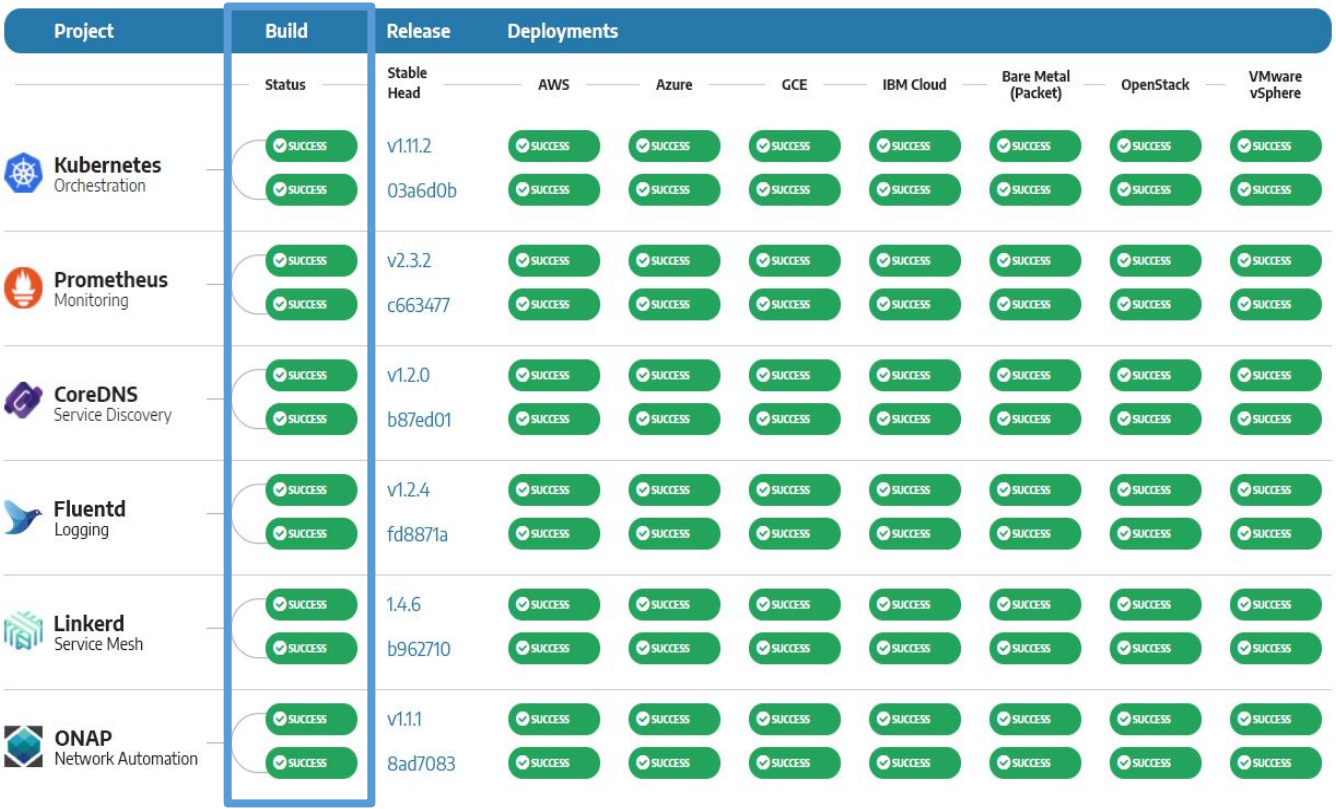
Testing System Overview

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

CLOUD NATIVE COMPUTING FOUNDATION

CI DASHBOARD: Overview

Last updated: 12 hours ago



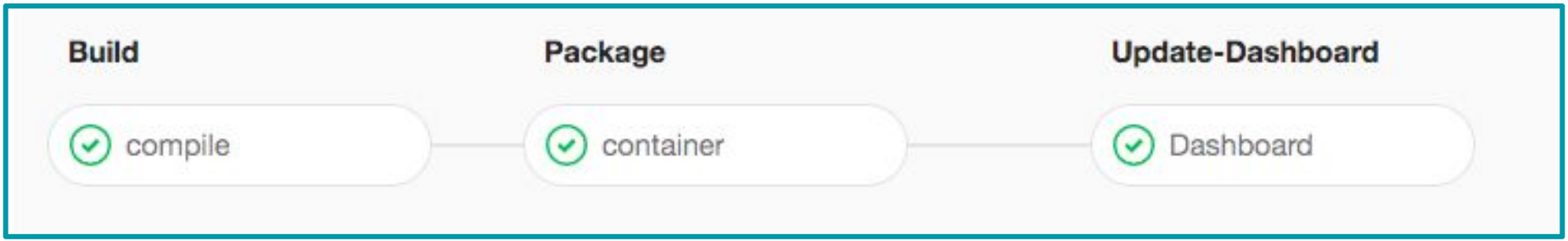
1. Build projects from source

Created for CNCF by Cross-Cloud CI

Report bug

Build Pipeline Stage

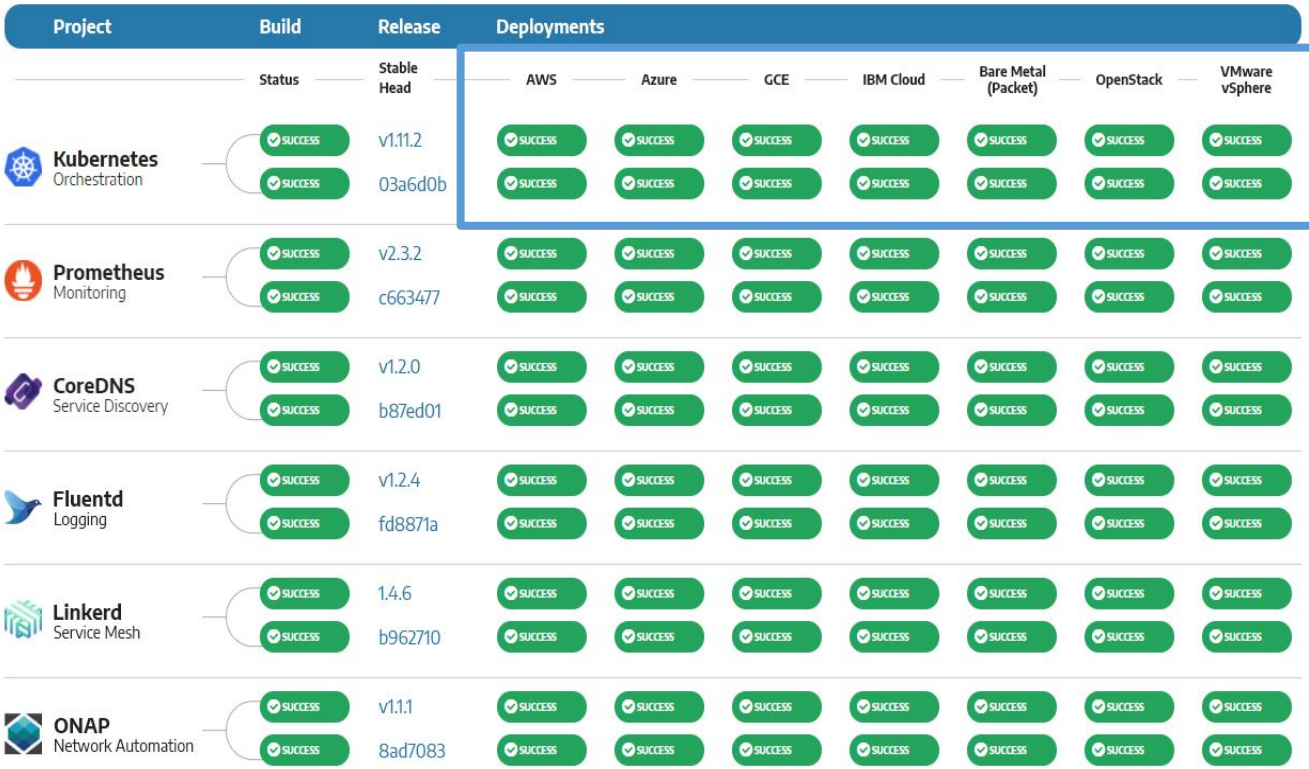
1. **Build:** Compile binaries and e2e tests
2. **Package:** Create containers, create artifact pinning config and push to registry
3. **Update-Dashboard:** Update build status badges



CLOUD NATIVE COMPUTING FOUNDATION

CI DASHBOARD: Overview

Last updated: 12 hours ago



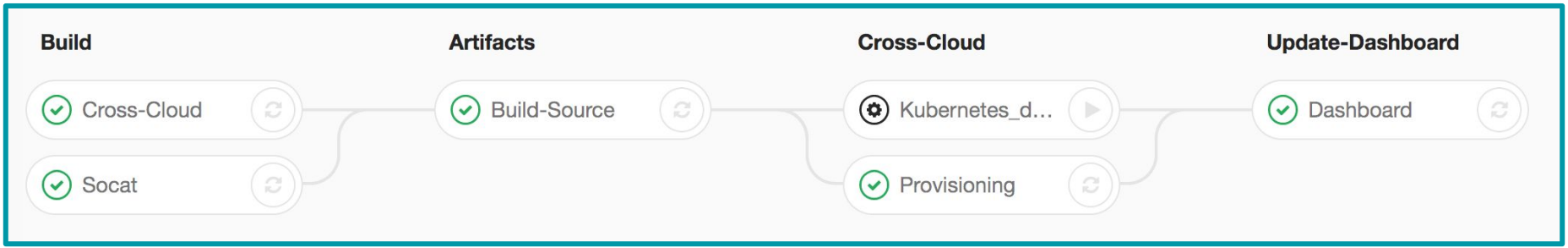
Created for CNCF by Cross-Cloud CI

Report bug

2. Provision w/ cross-cloud

Cloud Provisioning Pipeline Stage

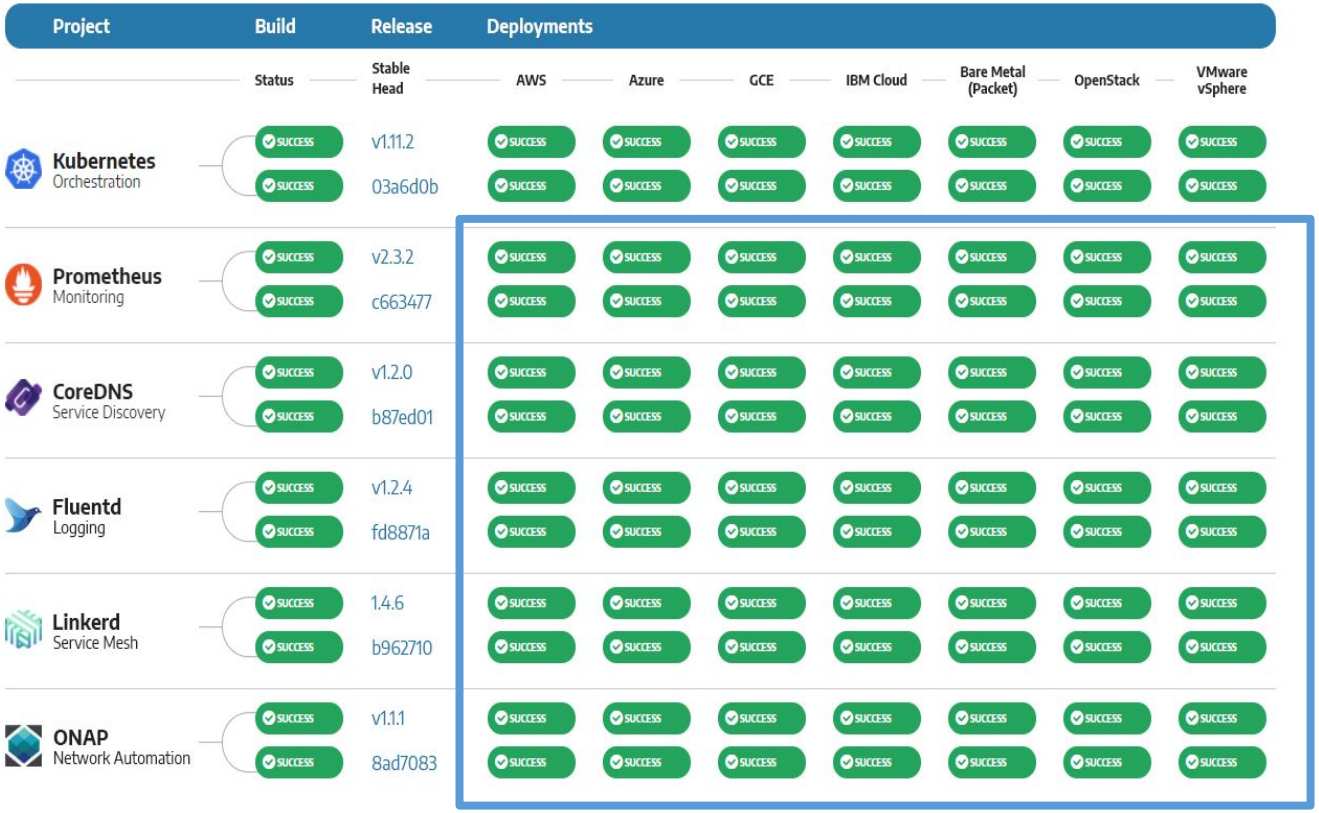
1. **Build:** Prepare provisioning software from the cross-cloud project
2. **Artifacts:** Collect K8s artifact pinnings from the previous K8s builds
3. **Cross-Cloud:** Deploy K8s onto each cloud using cross-cloud provisioner
4. **Update-Dashboard:** Update deployment badges



CLOUD NATIVE COMPUTING FOUNDATION

CI DASHBOARD: Overview

Last updated: 12 hours ago



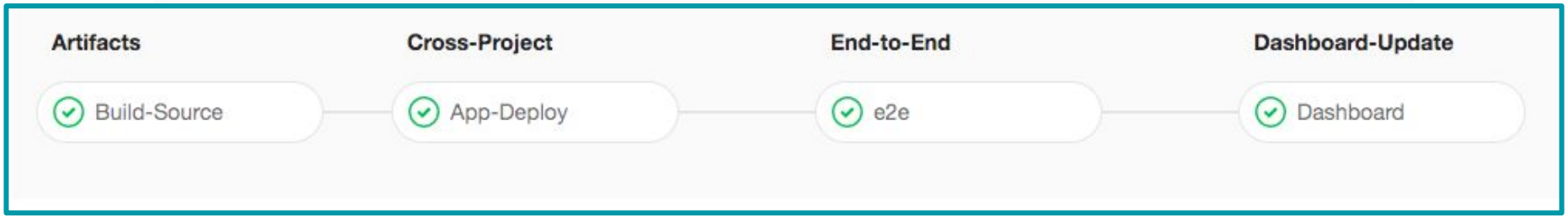
Created for CNCF by Cross-Cloud CI

Report bug

3. Deploy w/ cross-project

App Deployment Pipeline Stage

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



Code Review:
Using Cross-cloud with CNF Project

Lessons Learned

-

How to Collaborate

- **Attend CI WG meetings:**
  - **https://github.com/cncf/wg-ci**
- **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**
- **Review KubeCon Cross-cloud CI Intro Slides:**
  - **https://kccna18.sched.com/event/Grci**

Connect with the team

KubeCon CloudNativeCon North America 2018

@crosscloudci

@crosscloudci

@vulkcoop

crosscloudci@vulk.coop

Q&A

Thank you!

Today's Demo Prepared by:

taylor@vulk.coop
lucina@vulk.coop
watson@vulk.coop
denver@debian.nz

KubeCon
CloudNativeCon
North America 2018