



ArgoCon

NORTH AMERICA



The Case for ArgoCD and cdEvents Integration

Luke Philips – Kostis Kapelonis

Agenda



1. GitOps broke Dev EX
2. Intro to CD events
3. Existing support from other projects
4. Argo CD and CD events
5. Demo / examples
6. Specific use cases and more resources

Your hosts



ArgoCon
NORTH AMERICA



Luke Philips
Principal Staff
Software Engineer

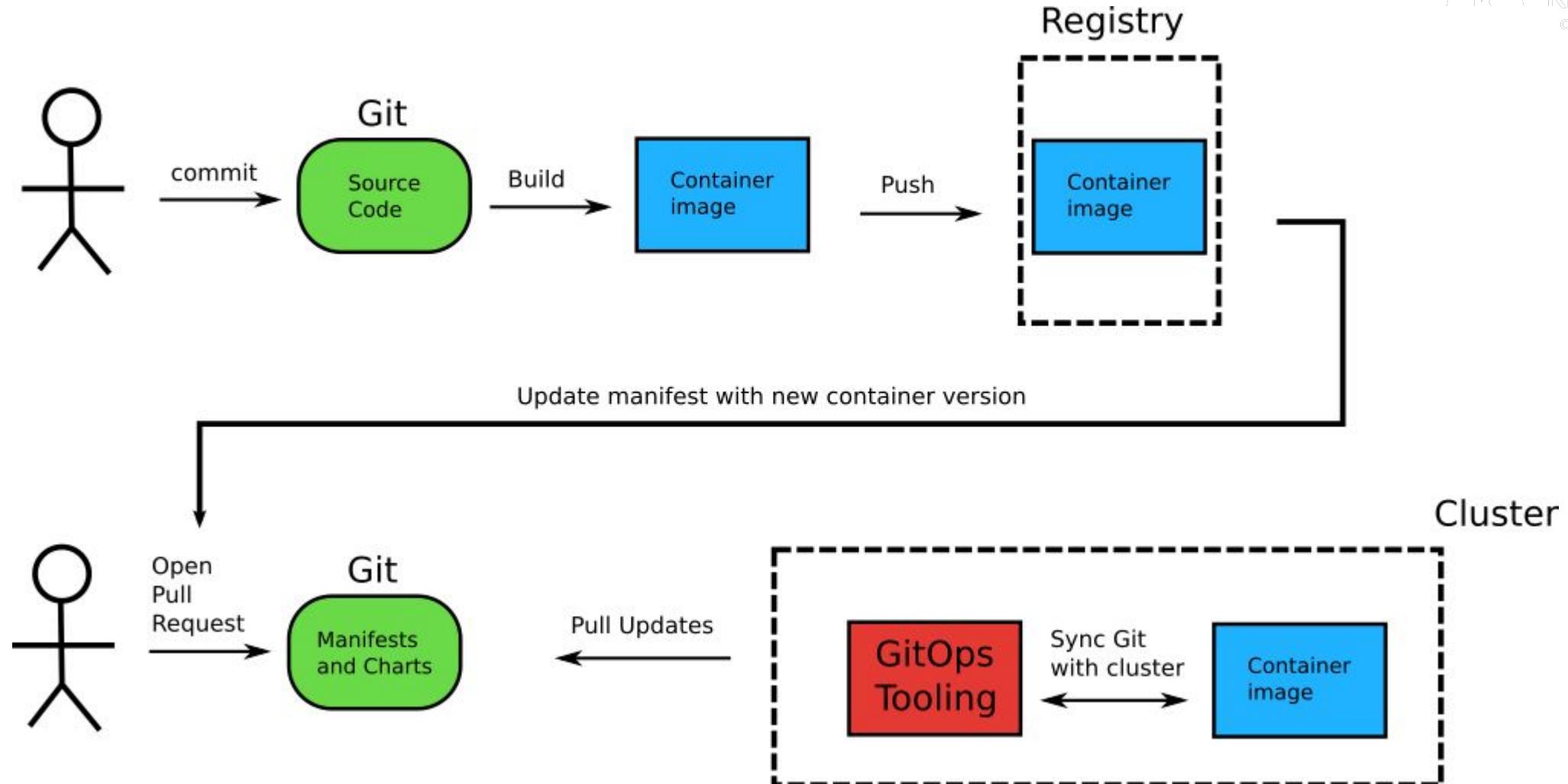


Kostis Kapelonis
Developer Advocate
Octopus Deploy

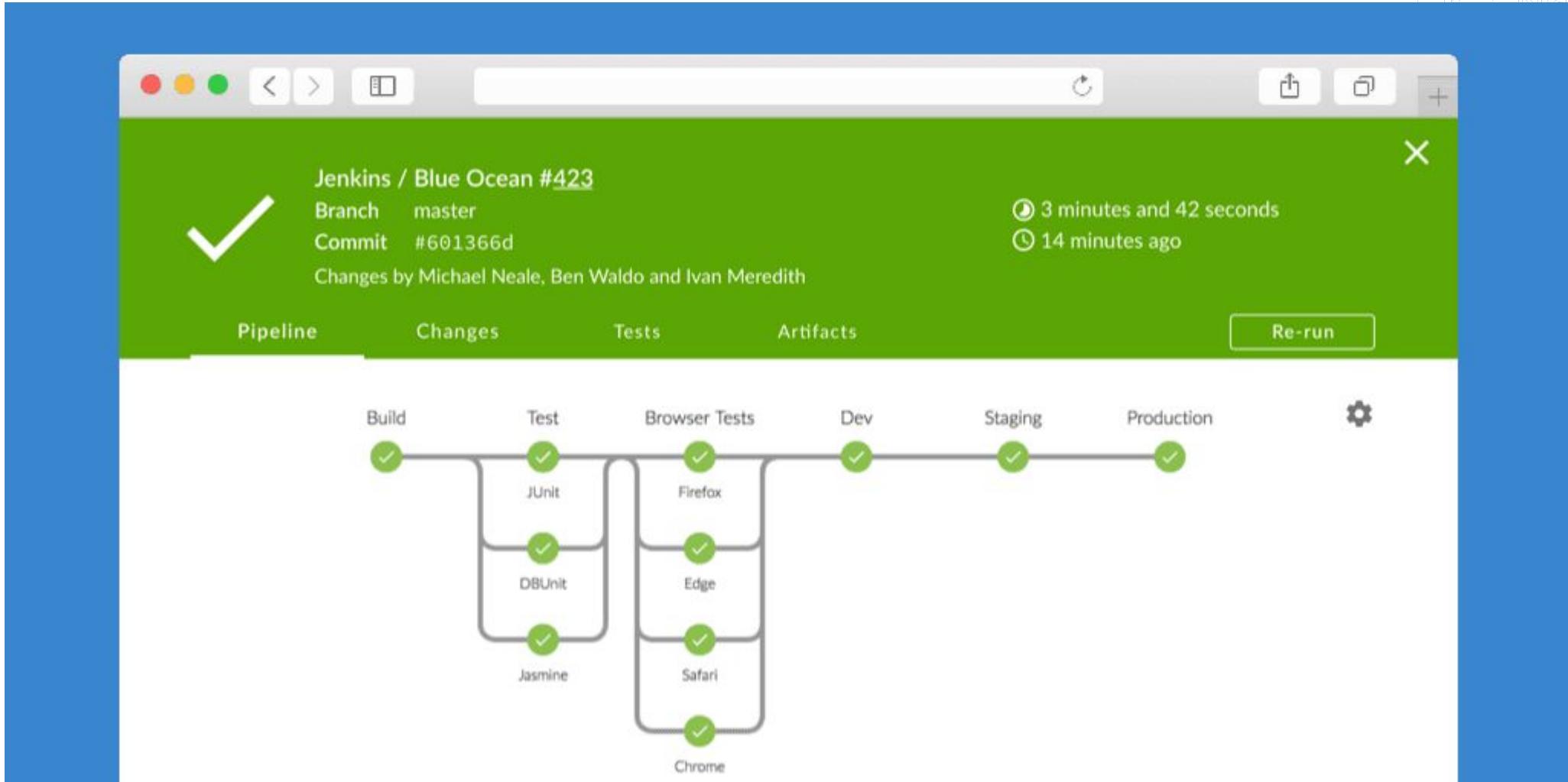


Dev Ex for GitOps

Converting to GitOps



Before



After



Jenkins / Blue Ocean #423

Branch: master
Commit: #601366d
Changes by Michael Neale, Ben Waldo and Ivan Meredith

3 minutes and 42 seconds
14 minutes ago

Pipeline Changes Tests Artifacts Re-run

Build → Test → Browser Tests → Dev → Staging → Production

Test Stages: JUnit, DBUnit, Jasmine, Firefox, Edge, Safari, Chrome

Applications

+ NEW APP SYNC APPS REFRESH APPS Search applications... Log in

Previous 1 2 3 4 Next

Sort: name ▾ Items per page: 10 ▾

Application	Project	Status	Labels	Repository	Target Rev...	Path	Destination	Namespace	Created At	Last Sync:
argo-cd	default	Healthy	OutOfSync	https://github.com/argoproj/argoproj-deployment	HEAD	argocd	in-cluster	argocd	02/22/2024 21:32:40 (2 years ago)	08/14/2025 18:10:51 (a month ago)
argo-events	default	Healthy	Synced	https://github.com/argoproj/argoproj-deployment	HEAD	argo-events	in-cluster	workflow-playground	02/22/2024 21:32:40 (2 years ago)	06/16/2025 21:55:16 (3 months ago)
argo-rollouts	default	Healthy	OutOfSync	https://github.com/argoproj/argoproj-deployment	HEAD	argo-rollouts	in-cluster	argo-rollouts	02/22/2024 21:32:41 (2 years ago)	09/22/2025 13:20:46 (a few seconds ago)
argo-workflows	default	Healthy	Synced	https://github.com/argoproj/argoproj-deployment	HEAD	argo-workflows	in-cluster	argo	02/22/2024 21:32:41 (2 years ago)	06/16/2025 21:55:16 (3 months ago)
argocd-image-updater	default	Healthy	Synced	https://github.com/argoproj/argoproj-deployment	HEAD	argocd-image-updater	in-cluster	argocd	02/22/2024 21:32:41 (2 years ago)	06/16/2025 21:55:16 (3 months ago)
cert-manager	default	Healthy	Synced	https://github.com/argoproj/argoproj-deployment	HEAD	cert-manager	in-cluster	cert-manager	02/22/2024 21:32:41 (2 years ago)	06/16/2025 21:55:16 (3 months ago)

How We Got Here



Continuous Integration & Delivery

App Definition and Development		Continuous Integration & Delivery																		Cloud Native Computing Foundation											
argo CNCF GRADUATED		flux CNCF GRADUATED		keptn CNCF INCUBATING		OpenKruise CNCF INCUBATING		agola		AKUITY		AppVeyor		AWS CodePipeline		Azure Pipelines		Bamboo		BRIGADE		Buildkite									
Concourse		D2 IQ Dispatch		devtron		flagger		GitHub Actions		GitLab		Gitness		go		Google Cloud Build		harness		HELMWAVE		hyscale		Jenkins		JENKINS X		k6		Keploy	
Liquibase		Mergify		Northflank		Octopus Deploy		OpenGitOps		OpsMx		ORTELLIUS		ozone		PipeCD		Razee		Screwdriver.cd		semaphore		spacelift		Spinnaker		TeamCity		TEKTON	
terramate		TESTKUBE		Travis CI		unleash		werf																							

FILTERS APPLIED (reset all):

Application Definition & Image Build

Application Definition and Development		Continuous Integration & Delivery												Streaming & Messaging													
dapr CNCF GRADUATED		HELM CNCF GRADUATED		ArtifactHUB CNCF INCUBATING		Backstage CNCF INCUBATING		Buildpacks.io CNCF INCUBATING		KubeVela CNCF INCUBATING		KubeVirt CNCF INCUBATING		OPERATOR FRAMEWORK CNCF INCUBATING		CARVEL CARVEL		Devfile.io Devfile.io									
KONVEYOR		KUADRANT		MICROQS		Nocmhost		Porter		radius		SCORE		sealer		SHIPWRIGHT		Tremor		cloudevents CNCF GRADUATED		STRIMZI CNCF INCUBATING					
argo CNCF GRADUATED		flux CNCF GRADUATED		keptn CNCF INCUBATING		OpenKruise CNCF INCUBATING		BRIGADE OpenGitOps		Piped		Werf		kube-burner						openGemini		SCHEMABOHO					
HARBOR CNCF GRADUATED																											

Container Registry

Challenge Your Preconceived Notions





Intro to CD Events

cdEvents - Intro



- Common **specification** for Continuous Integration, Continuous Delivery, and Continuous Operation event communication
- Tool-agnostic, vendor-neutral
- Part of Continuous Delivery Foundation (CDF)
- Not a tool - a shared language

cdEvents - Intro



- Containers standardized shipping
- cdEvents standardizes communication



```
{  
  "context": {  
    "version": "0.4.1",  
    "id": "271069a8-fc18-44f1-b38f-9d70a1695819",  
    "chainId": "4c8cb7dd-3448-41de-8768-eec704e2829b",  
    "source": "/event/source/123",  
    "type": "dev.cdevents.environment.created.0.2.0",  
    "timestamp": "2023-03-20T14:27:05.315384Z",  
    "schemaUri": "https://myorg.com/schema/custom",  
    "links": [  
      {  
        "linkType": "RELATION",  
        "linkKind": "TRIGGER",  
        "target": {  
          "contextId": "5328c37f-bb7e-4bb7-84ea-9f5f85e4a7ce"  
        },  
        "tags": {  
          "foo": "bar",  
          "foo2": "bar"  
        }  
      }  
    ]  
  },  
  "subject": {  
    "id": "mySubject123",  
    "source": "/event/source/123",  
    "type": "environment",  
    "content": {  
      "name": "testEnv",  
      "url": "https://example.org/testEnv"  
    }  
  }  
}
```

What happened

Where it
happened

Types of Events



(Core)

pipelineRun, taskRun

(Source control)

repositoryCreated,
branchDeleted, changeCreated

(Operations)

incidentReported, ticketCreated

(Continuous Integration)

buildStarted, artifactPackaged

(Continuous Deployment)

environmentCreated,
serviceDeployed

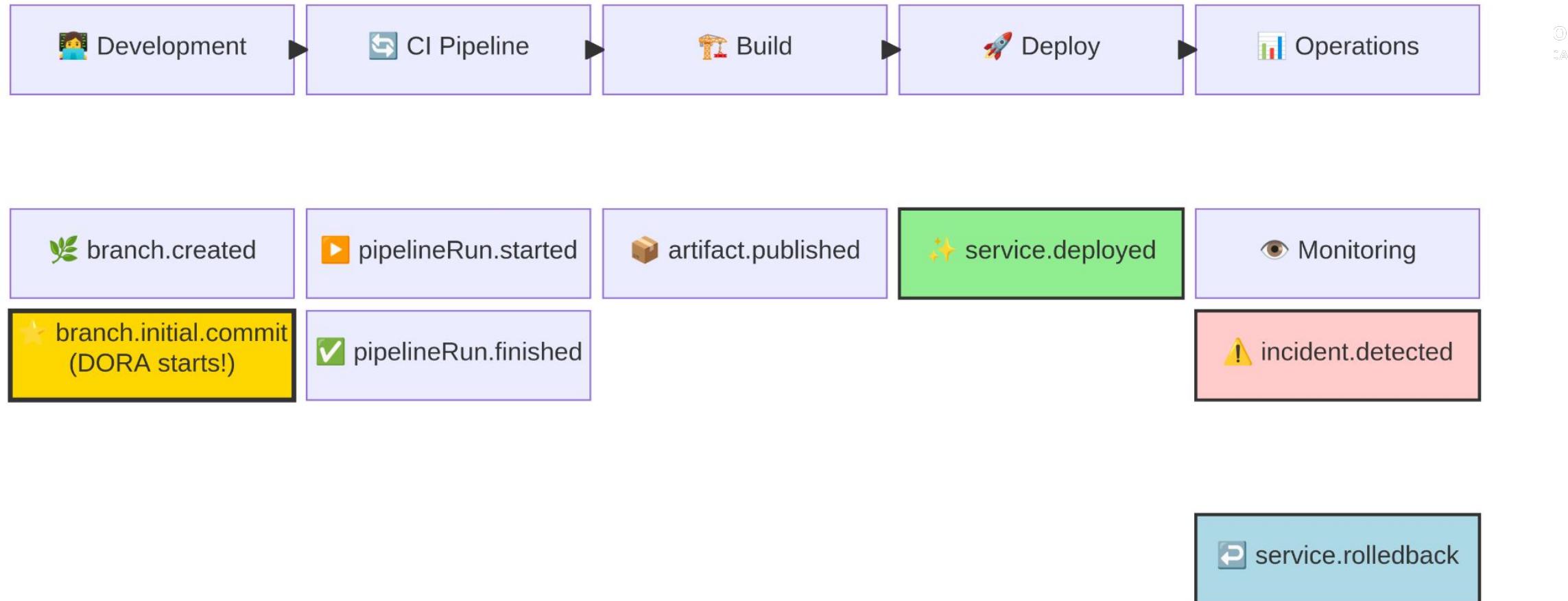
(Testing)

testCaseRunStarted,
testSuiteRunQueued

Most relevant to Argo CD



cdEvents - In Action



Each event has standard structure: subject (what), predicate** (action), context (when/where)

cdEvents - Why?



Integration Complexity

- Every tool speaks a different language
- Glue code multiplies with each new tool
- Example: 3 companies, 3 completely different tool stacks

Observability Gaps

- Can't see the full picture across tools
- Questions we can't answer:
 - What's running right now?
 - Where's the bottleneck?
 - How long did end-to-end take?



Vendor Lock-in

- Switching tools means rewriting integrations
- Technical debt prevents innovation
- Cost of change is prohibitive



Ecosystem support

cdEvents - Already Adopted

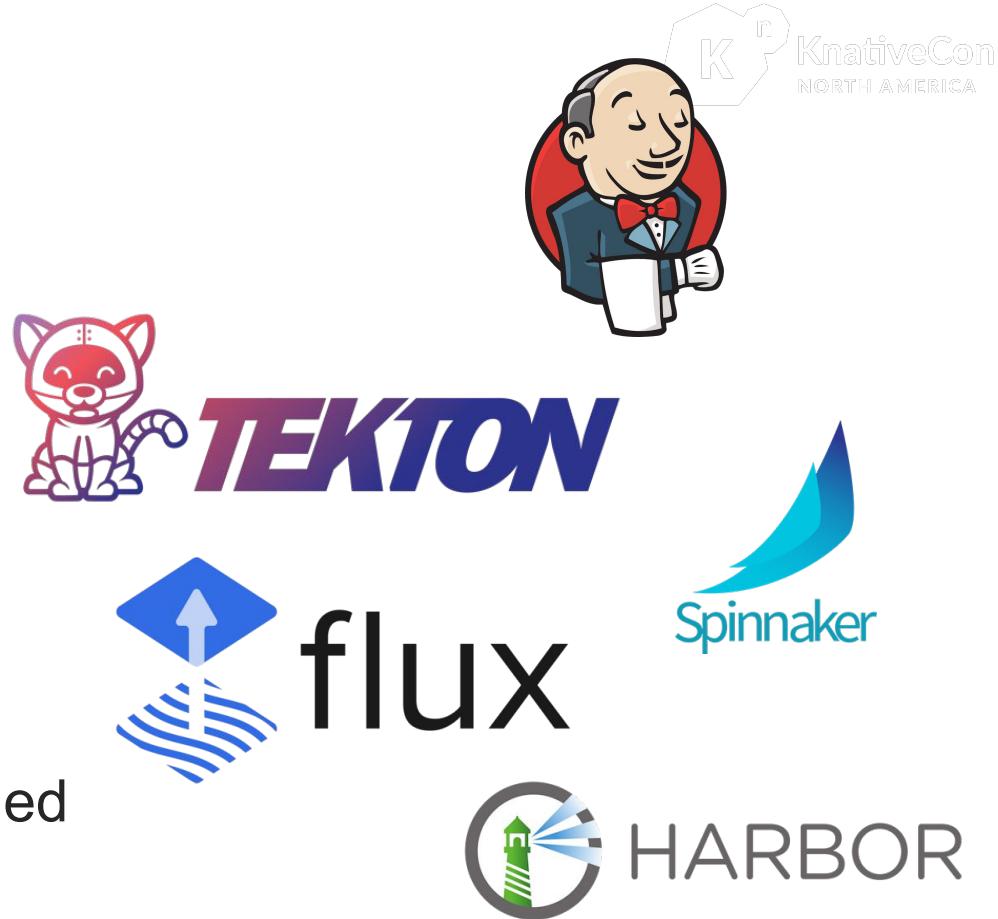


Production Ready:

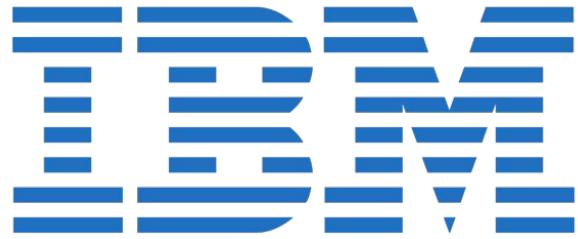
- Jenkins - Plugin available in official repository
- Tekton
- Spinnaker
- Flux
- Argo Events

In Progress:

- Harbor - CloudEvents support, cdEvents planned
- ArgoCD - That's why we're here!



cdEvents - contributors



ERICSSON



Red Hat



vmware®



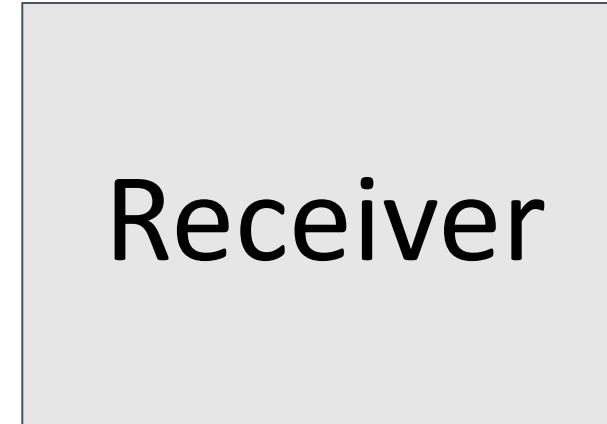


Argo CD and CDEvents

cdEvents - direct



((((p)))
cd
events



((((p)))
cd
events

cdEvents - intermediate proxy



cdEvents - Receive



((d))
events

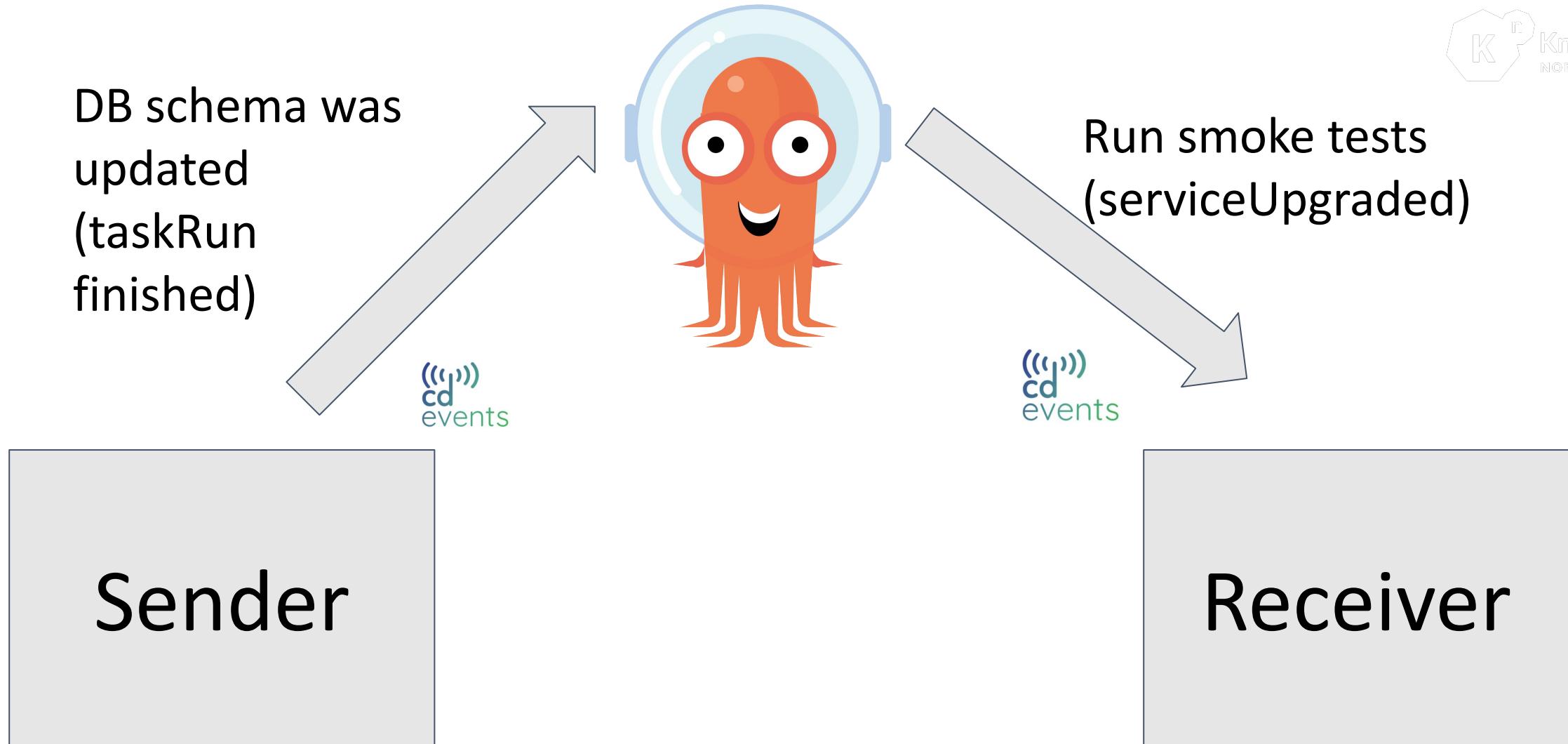
Sender



((d))
events



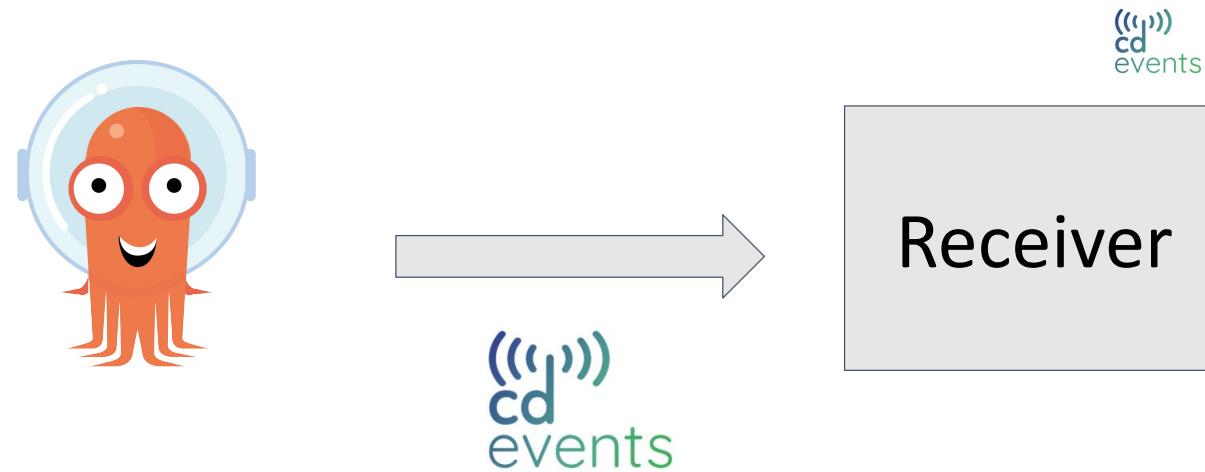
cdEvents - full vision





Demo

Demo



- Argo CD mapping for cdEvents via Notifications
- serviceDeployed, servicePublished, serviceRemoved
- incidentDetected, incidentResolved



github.com/argo-multiverse-labs/local-cluster/tree/main/argo-cdviz

Demo



```
# CDEvents-compliant notification templates
templates: <-- RED ARROW POINTS HERE
# Service Deployed/Upgraded Template
template.cdevents-service-deployed: |
  webhook:
    cdevents:
      method: POST
      body: |
        {
          "context": {
            "version": "0.4.1",
            "id": "{{ .app.metadata.uid }}",
            "source": "/argocd/{{ .app.metadata.name }}",
            "type": "dev.cdevents.service",
            "timestamp": "{{ .app.status.updatedAt }}"
          },
          "subject": {
```

```
        "subject": {
          "id": "{{ .app.spec.destination.namespace }}",
          "type": "service",
          "source": "/argocd/{{ .app.spec.destination.name }}",
          "content": {
            "environment": {
              "id": "{{ .app.spec.destination.namespace }}",
              "source": "{{ .app.spec.destination.name }}"
            },
            "artifactId": "pkg:git/{{ .app.spec.source }}"
          }
        },
        "customData": {
          "argocdApp": "{{ .app.metadata.name }}",
          "syncStatus": "{{ .app.status.sync.status }}",
          "healthStatus": "{{ .app.status.health.status }}",
          "targetRevision": "{{ .app.spec.destination.name }}",
          "cluster": "{{ .app.spec.destination.name }}"
        }
      }
    }
  }
}
```

RED ARROW POINTS HERE

Demo



Logs (argocd/argocd-notifications-controller-67b649bdb8-spp7x:notifications-controller)[tail]

Autoscroll:On FullScreen:Off Timestamps:Off Wrap:Off

```
{"level":"info","msg":"Trigger on-health-recovered-cdevents result: [[{"0":LYPjeGE3jNFG1RL2f-jarm0r4fA [cdevents-incident-resolved] false}]]","resource":"argocd/health"}, {"level":"info","msg":"Trigger on-sync-running-cdevents result: [[{"0":ic91dZU3WrtgRdlZCpg-L8ARI0Q [] false}]]","resource":"argocd/hello-app-prod", "time":"2025-11-05T21:31:33Z"}, {"level":"info","msg":"Trigger on-sync-status-unknown-cdevents result: [[{"0":6SzWb05EK-0v90hwjyvtTbN7S6A [cdevents-incident-detected] false}]]","resource":"argocd/health"}, {"level":"info","msg":"Trigger on-deployed-cdevents result: [[{"0":Yv81TUUs0gmPTEyk-v8Lb6ZKEo0g [cdevents-service-deployed] true}]]","resource":"argocd/hello-app"}, {"level":"info","msg":"Sending notification about condition 'on-deployed-cdevents.[0].Yv81TUUs0gmPTEyk-v8Lb6ZKEo0g' to '{cdevents }' using the configuration"}, {"level":"info","msg":"2025/11/05 21:31:33 [DEBUG] POST http://cdviz-collector.cdviz.svc.cluster.local:8080/webhook/000-cdevents"}, {"level":"info","msg":"Processing completed","resource":"argocd/hello-app-prod", "time":"2025-11-05T21:31:33Z"}, {"level":"info","msg":"Start processing","resource":"argocd/hello-app-prod", "time":"2025-11-05T21:31:33Z"}, {"level":"info","msg":"Trigger on-deployed-cdevents result: [[{"0":Yv81TUUs0gmPTEyk-v8Lb6ZKEo0g [cdevents-service-deployed] true}]]","resource":"argocd/hello-app"}, {"level":"info","msg":"Notification about condition 'on-deployed-cdevents.[0].Yv81TUUs0gmPTEyk-v8Lb6ZKEo0g' already sent to '{cdevents }' using the configuration"}, {"level":"info","msg":"Trigger on-health-degraded-cdevents result: [[{"0":zoG5zUjYgjimkwCGgIQGjx1h05s [cdevents-incident-detected] false}]]","resource":"argocd/health"}, {"level":"info","msg":"Trigger on-on-health-degraded-cdevents result: [[{"0":zoG5zUjYgjimkwCGgIQGjx1h05s [cdevents-incident-detected] false}]]","resource":"argocd/health"}, {"level":"info","msg":"Trigger on-deleted-cdevents result: [[{"0":BmlU8P6R19BGtNv5gj8udVypmxQ [cdevents-service-removed] false}]]","resource":"argocd/hello-app"}, {"level":"info","msg":"Trigger on-sync-failed-cdevents result: [[{"0":QocUZC1Qz0--b2WewALX85YPE5o [cdevents-sync-failed] false}]]","resource":"argocd/hello-app"}, {"level":"info","msg":"Trigger on-health-recovered-cdevents result: [[{"0":LYPjeGE3jNFG1RL2f-jarm0r4fA [cdevents-incident-resolved] false}]]","resource":"argocd/health"}, {"level":"info","msg":"Trigger on-sync-running-cdevents result: [[{"0":ic91dZU3WrtgRdlZCpg-L8ARI0Q [] false}]]","resource":"argocd/guestbook-prod", "time":"2025-11-05T21:31:33Z"}, {"level":"info","msg":"Trigger on-sync-status-unknown-cdevents result: [[{"0":6SzWb05EK-0v90hwjyvtTbN7S6A [cdevents-incident-detected] false}]]","resource":"argocd/guestbook"}, {"level":"info","msg":"Trigger on-deployed-cdevents result: [[{"0":Yv81TUUs0gmPTEyk-v8Lb6ZKEo0g [cdevents-service-deployed] true}]]","resource":"argocd/guestbook"}, {"level":"info","msg":"Notification about condition 'on-deployed-cdevents.[0].Yv81TUUs0gmPTEyk-v8Lb6ZKEo0g' already sent to '{cdevents }' using the configuration"}, {"level":"info","msg":"Trigger on-health-degraded-cdevents result: [[{"0":zoG5zUjYgjimkwCGgIQGjx1h05s [cdevents-incident-detected] false}]]","resource":"argocd/health"}, {"level":"info","msg":"Processing completed","resource":"argocd/guestbook-prod", "time":"2025-11-05T21:31:38Z"}, {"level":"info","msg":"Start processing","resource":"argocd/guestbook-prod", "time":"2025-11-05T21:31:38Z"}, {"level":"info","msg":"Trigger on-deleted-cdevents result: [[{"0":BmlU8P6R19BGtNv5gj8udVypmxQ [cdevents-service-removed] false}]]","resource":"argocd/guestbook"}, {"level":"info","msg":"Trigger on-sync-failed-cdevents result: [[{"0":QocUZC1Qz0--b2WewALX85YPE5o [cdevents-sync-failed] false}]]","resource":"argocd/guestbook"}, {"level":"info","msg":"Trigger on-health-recovered-cdevents result: [[{"0":LYPjeGE3jNFG1RL2f-jarm0r4fA [cdevents-incident-resolved] false}]]","resource":"argocd/health"}, {"level":"info","msg":"Trigger on-sync-running-cdevents result: [[{"0":ic91dZU3WrtgRdlZCpg-L8ARI0Q [] false}]]","resource":"argocd/guestbook-prod", "time":"2025-11-05T21:31:33Z"}, {"level":"info","msg":"Trigger on-sync-status-unknown-cdevents result: [[{"0":6SzWb05EK-0v90hwjyvtTbN7S6A [cdevents-incident-detected] false}]]","resource":"argocd/guestbook"}, {"level":"info","msg":"Trigger on-deployed-cdevents result: [[{"0":Yv81TUUs0gmPTEyk-v8Lb6ZKEo0g [cdevents-service-deployed] true}]]","resource":"argocd/guestbook"}, {"level":"info","msg":"Notification about condition 'on-deployed-cdevents.[0].Yv81TUUs0gmPTEyk-v8Lb6ZKEo0g' already sent to '{cdevents }' using the configuration"}, {"level":"info","msg":"Trigger on-health-degraded-cdevents result: [[{"0":zoG5zUjYgjimkwCGgIQGjx1h05s [cdevents-incident-detected] false}]]","resource":"argocd/health"}, {"level":"info","msg":"Processing completed","resource":"argocd/guestbook-prod", "time":"2025-11-05T21:31:38Z"}
```

github.com/argo-multiverse-labs/local-cluster/tree/main/argo-cdviz



Demo



Home > Dashboards > CDEvents Activity

Events By Hours

Hour	Events
17:00	6
18:00	9
19:00	6
21:00	12
22:00	3

How many sources?

Name	Total
count service/deployed	6
count service/removed	6
count service/upgraded	33
count incident/detected	6

Events Logs

timestamp	subject	predicate	payload_subject	payload_context	payload_ci	imported_at
2025-11-04 21:27:43	service	upgraded	{ "id": "dev/guestbook-dev", "type": "service", "source": "/argocd/dev", "content": { "artifactId": "pkg:git/github.com/argo-multiverse-labs/argocd-example-apps@8be7ad4758b4dc7e74d093e1c2bb2ff2b74efa88", "environment": { "id": "dev", "source": "https://kubernetes.default.svc" } } }	{ "id": "542c2e19_36f4_45be_b543_3e7d0c442a62_20251105042745", "type": "dev.cdevents.service.upgraded.0.2.0", "source": "/argocd/argocd", "version": "0.4.1", "timestamp": "2025-11-05T04:27:43Z" }	{ "cluster": "https://kubernetes.default.svc", "argocdApp": "guestbook-dev", "namespace": "dev", "syncStatus": "Synced", "healthStatus": "Healthy", "targetRevision": "<no value>" }	2025-11-04 21:27:45

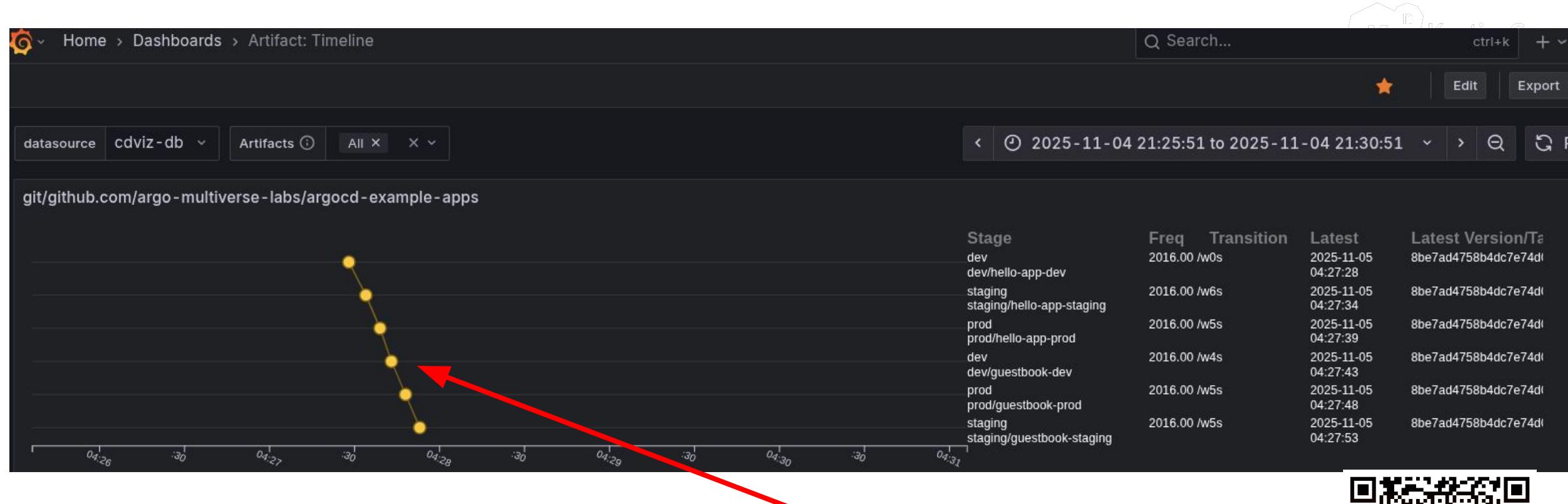
Inspect value

{ "cluster": "https://kubernetes.default.svc", "argocdApp": "guestbook-dev", "namespace": "dev", "syncStatus": "Synced", "healthStatus": "Healthy", "targetRevision": "<no value>" }



github.com/argo-multiverse-labs/local-cluster/tree/main/argo-cdviz

Demo

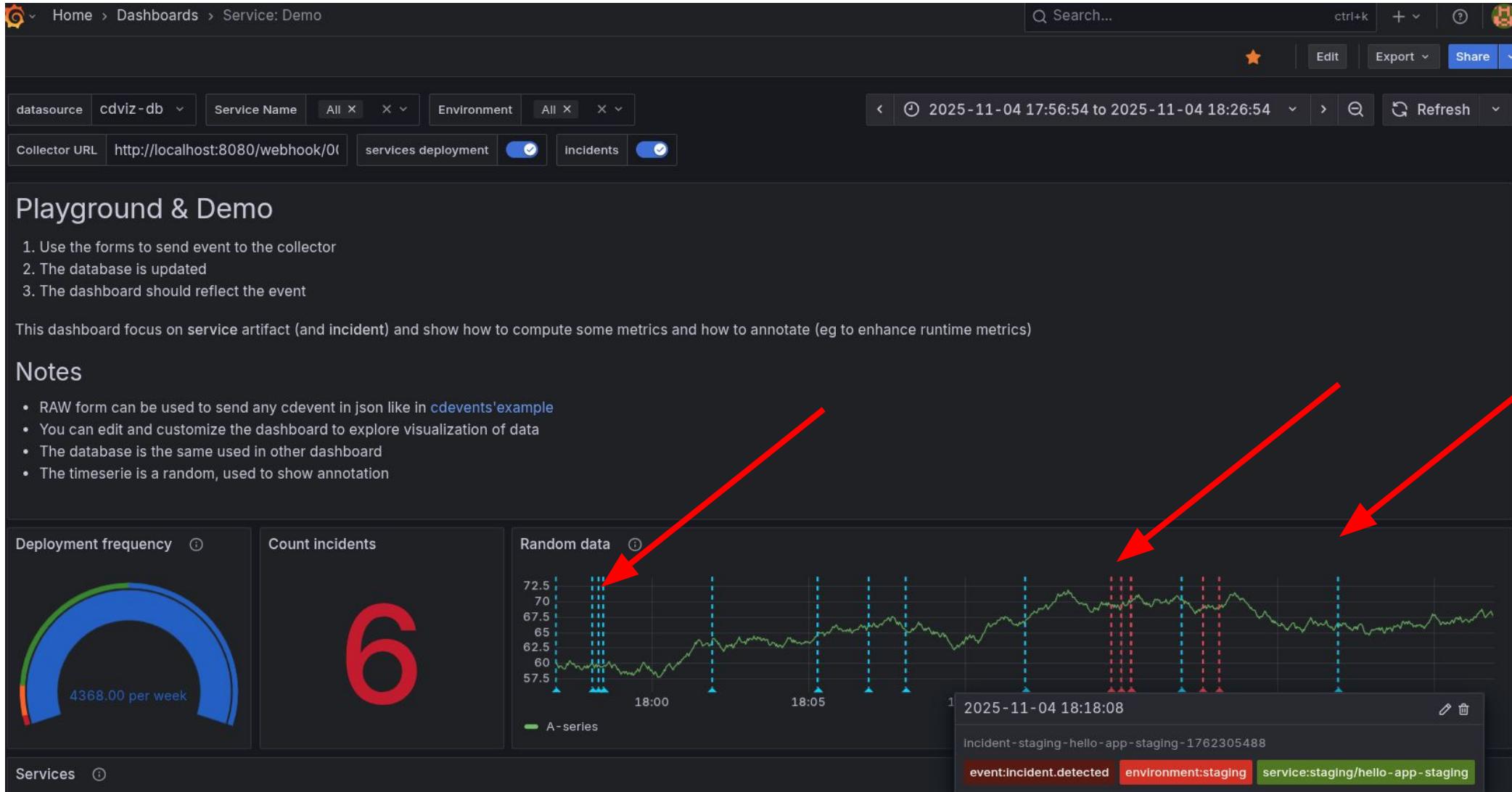


github.com/argo-multiverse-labs/local-cluster/tree/main/argo-cdviz

Demo



ArgoCon
NORTH AMERICA



KnativeCon
NORTH AMERICA



github.com/argo-multiverse-labs/local-cluster/tree/main/argo-cdviz

PR is already open



feat: Proposal: cdEvents and Argo #24106

KnativeCon
NORTH AMERICA

Open

lukepatrick wants to merge 3 commits into argoproj:master from lukepatrick:feature/cdevents-proposal

👍👎 We need your feedback!



<https://github.com/argoproj/argo-cd/pull/24106>



Use cases

Use Case - Multi-Argo Architecture

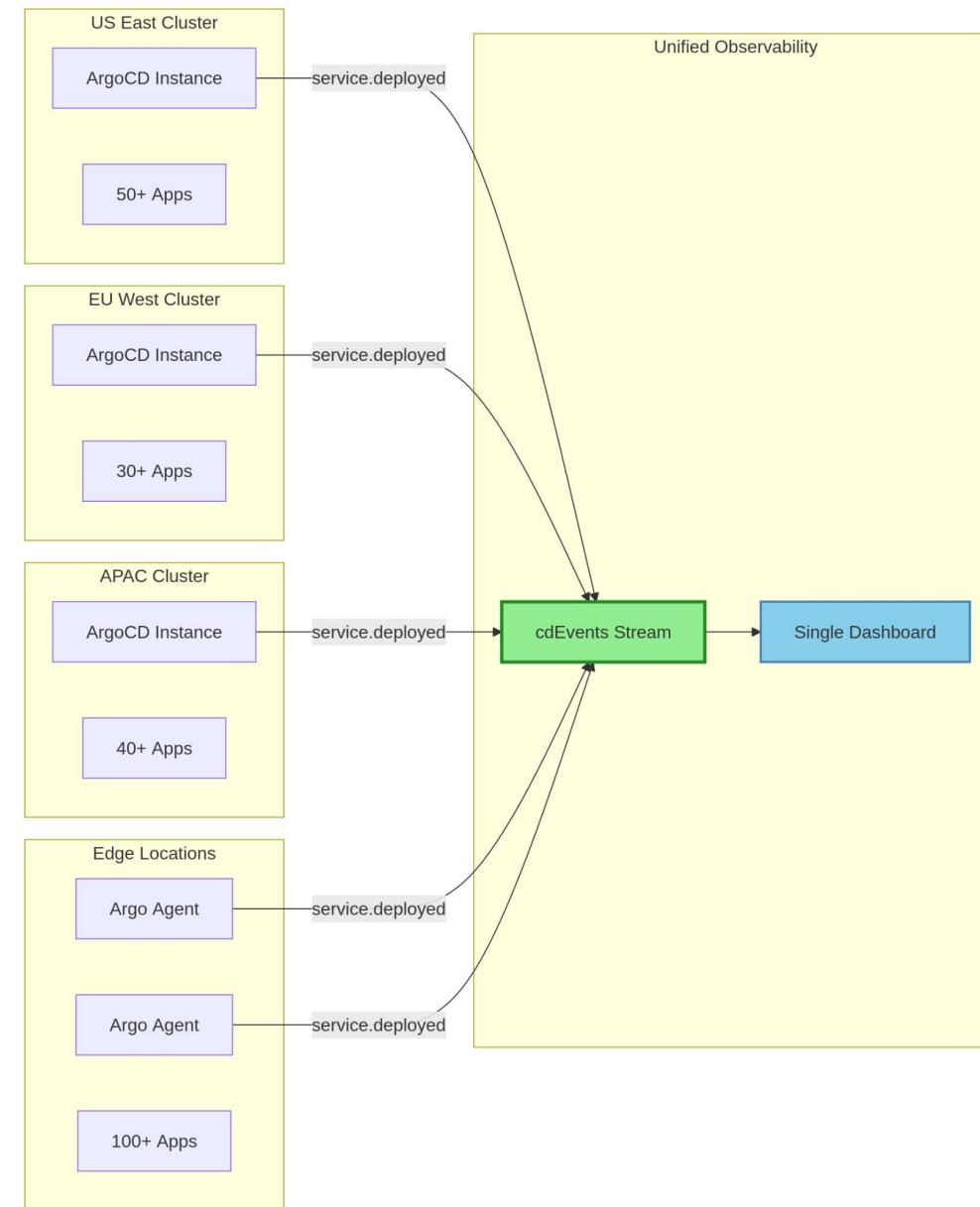


Many ArgoCD Instances, One Event Stream

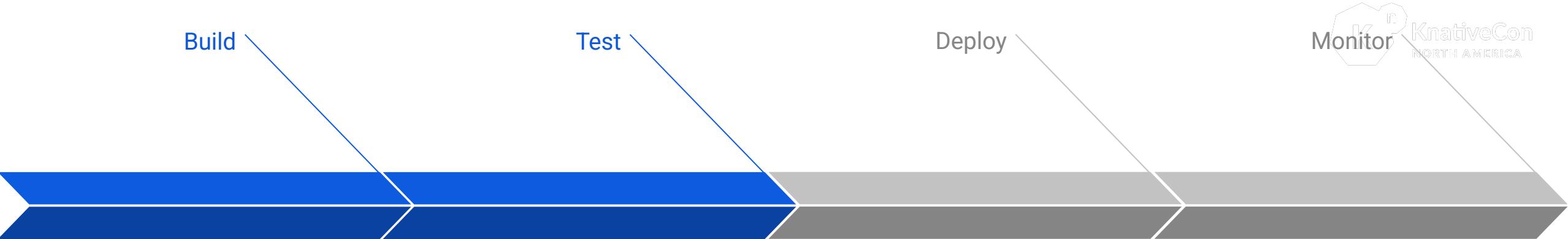
The Challenge:

Which Argo architecture do you choose?

- **Hub-and-Spoke** (single control plane)
- **Distributed** (many independent instances)
- **Managed** (Akuity, Codefresh)
- **Argo Agent** (upcoming)



Use Case - Developer Dashboard



GitHub actions

Build started

Artifact packaged

TestKube

Test suite run started

Test suite run finished

Argo CD

Environment created

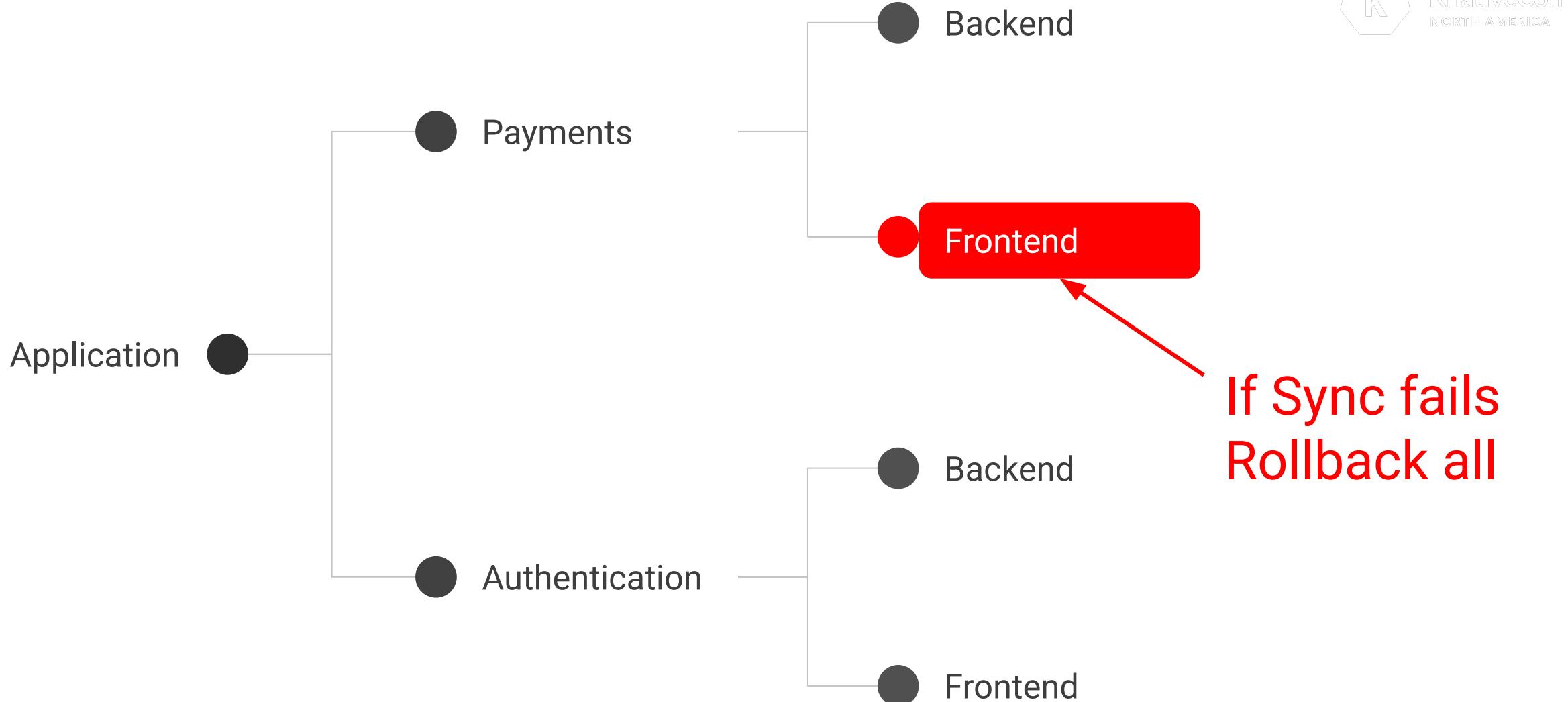
Service deployed

Monitoring system

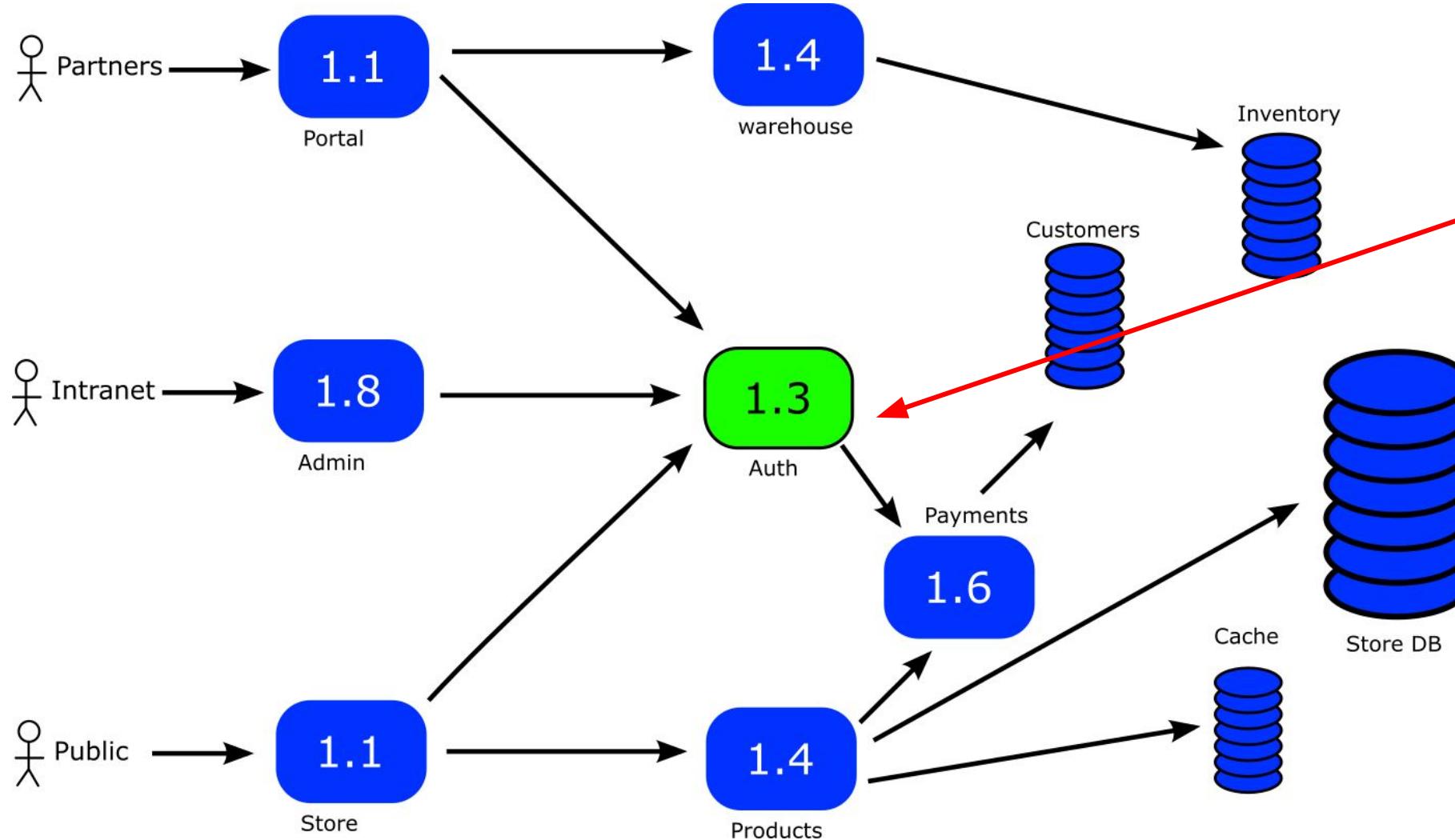
Incident created

Ticket opened

Use Case - Distributed Rollback

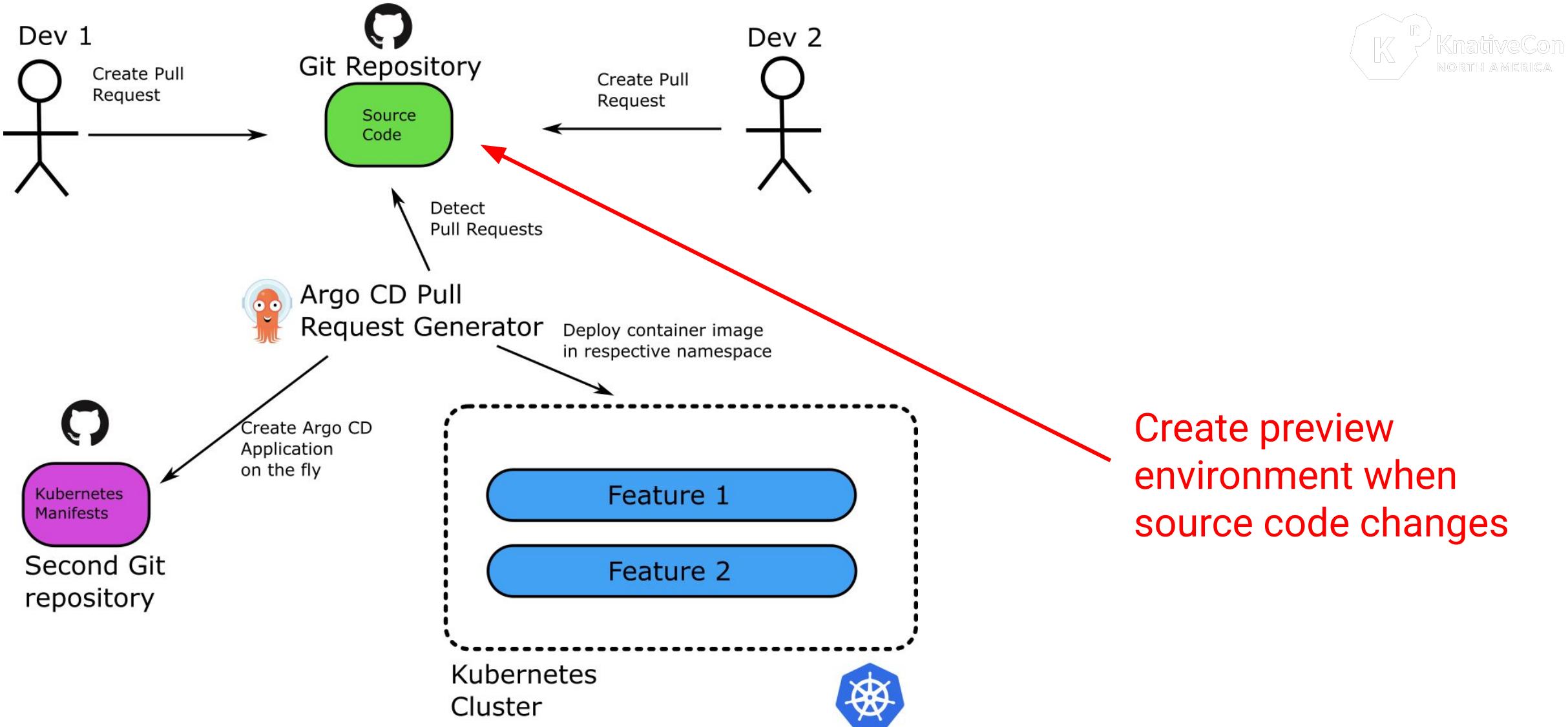


Use Case - Microservice Testing



Test portal, admin, store when Auth is deployed

Simple Preview Environments



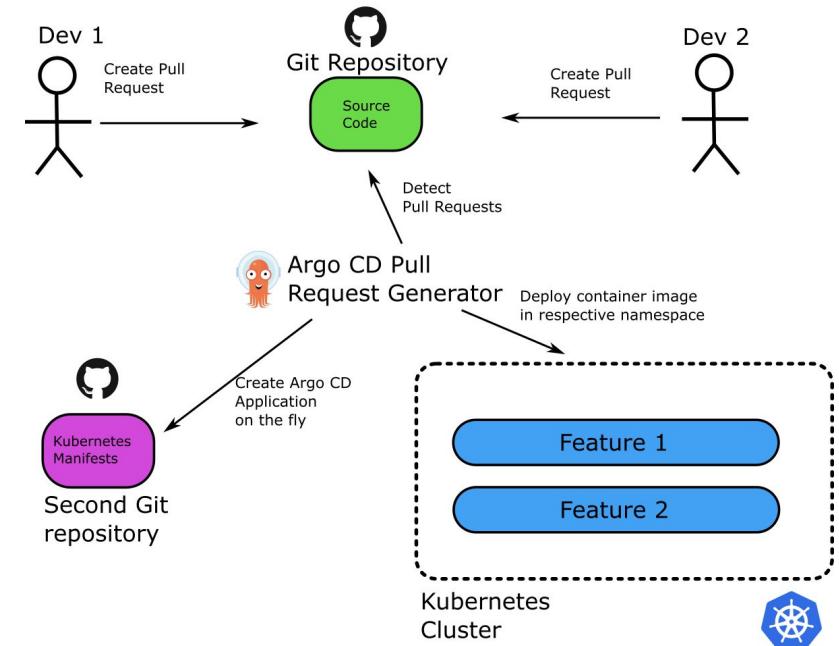
Use Case - Preview Environments



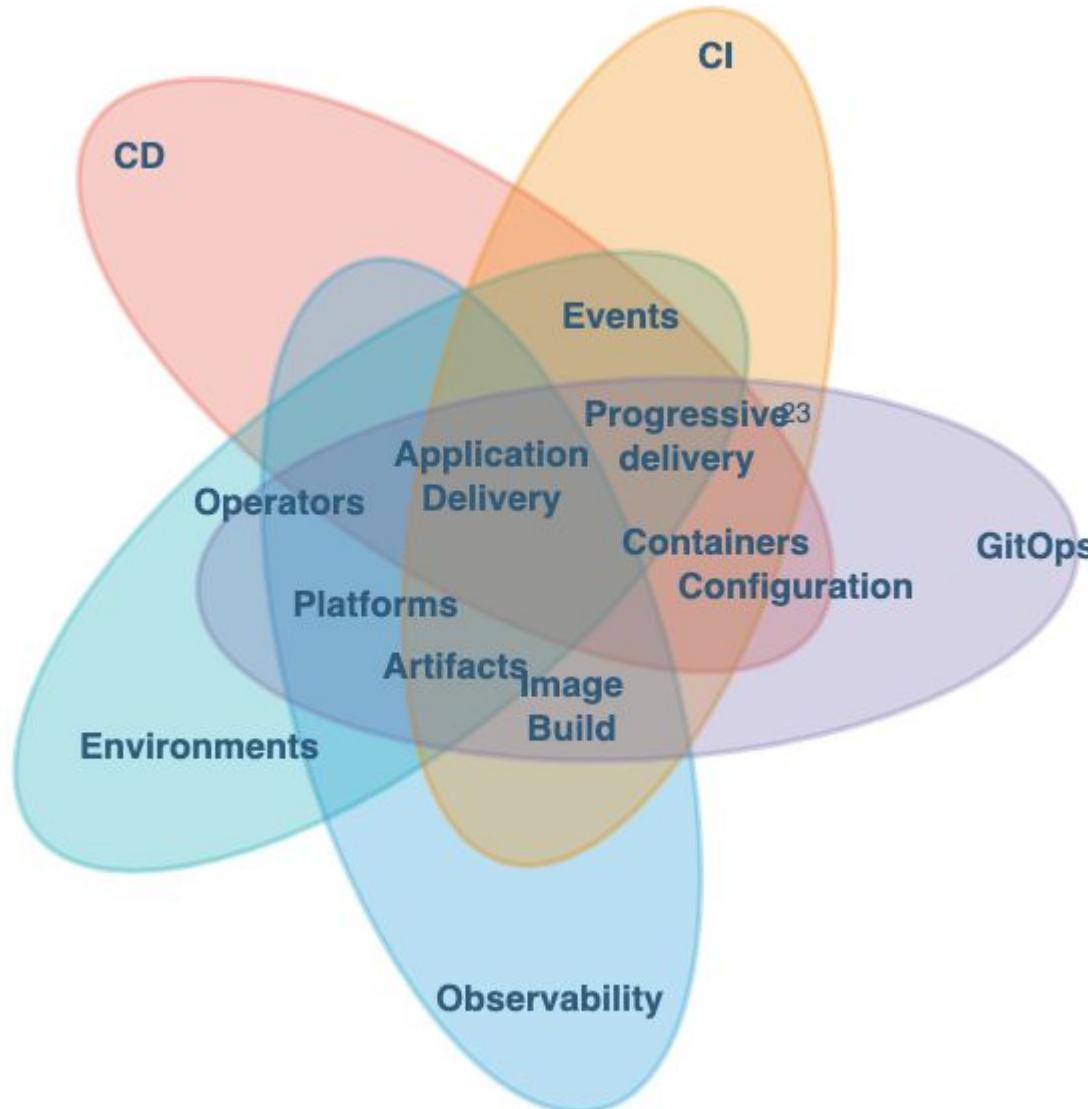
Advanced scenarios

Create/Update preview environment when

- the new DB schema is updated
- A cache is cleared
- A 3rd party service is updated
- When security controls/RBAC changes



The Expanding Domain





Conclusion

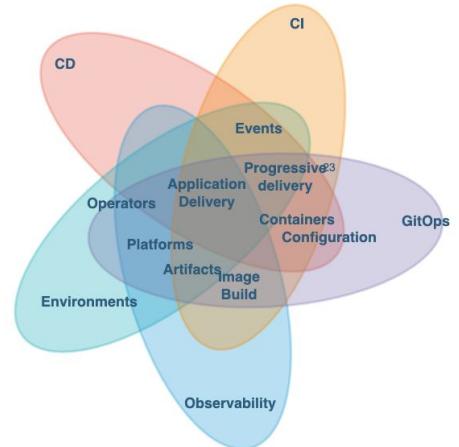
Summary



- cdEvents is a standard for cloud communication
- Already supported by Jenkins, Flux, Spinnaker etc
- Proposal is open for Argo CD - give feedback !
- <https://github.com/argoproj/argo-cd/pull/24106>

Join #argo-cd in [CNCF slack](#) @luke @kostis

Contact lukephilips@gmail.com and kostis.kapelonis@octopus.com



Resources - Thank You!



1. github.com/argo-multiverse-labs/local-cluster/tree/main/argo-cdviz
2. <https://cdviz.dev/>
3. <https://cdviz.dev/docs/getting-started>