

The Future of DevOps

GitOps 2.0



Dan Garfield

Chief Technology Evangelist

() **codefresh**



@todaywasawesome





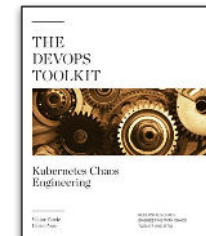
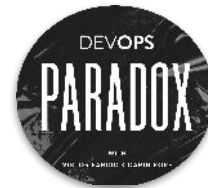
Viktor Farcic

Principal DevOps Architect

() **codefresh**



@vfarcic





Victor Cuascut

Director of DevOps

veeva



Agenda

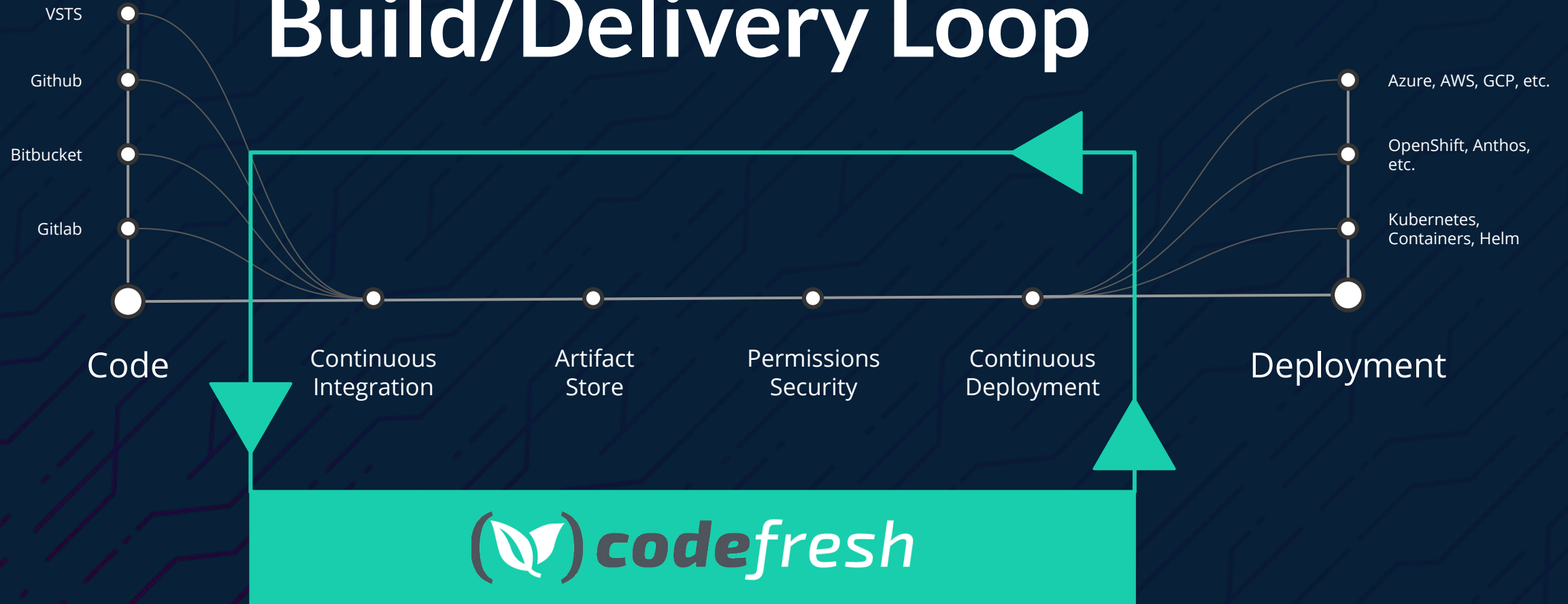
1 **10 MINUTES**
What is GitOps 2.0

2 **20 MINUTES**
Customer Story

3 **15 MINUTES**
Live demo

4 **10 MINUTES**
Q/A

The Code Build/Delivery Loop







- **Declarative Configuration**
- **Version controlled, immutable storage**
- **Automated delivery**
- **Software Agents**
- **Closed loop**

<https://codefresh.io/devops/announcing-gitops-working-group/>

<https://thenewstack.io/codefresh-launches-gitops-2-0-as-a-gitops-working-group-takes-flight/>

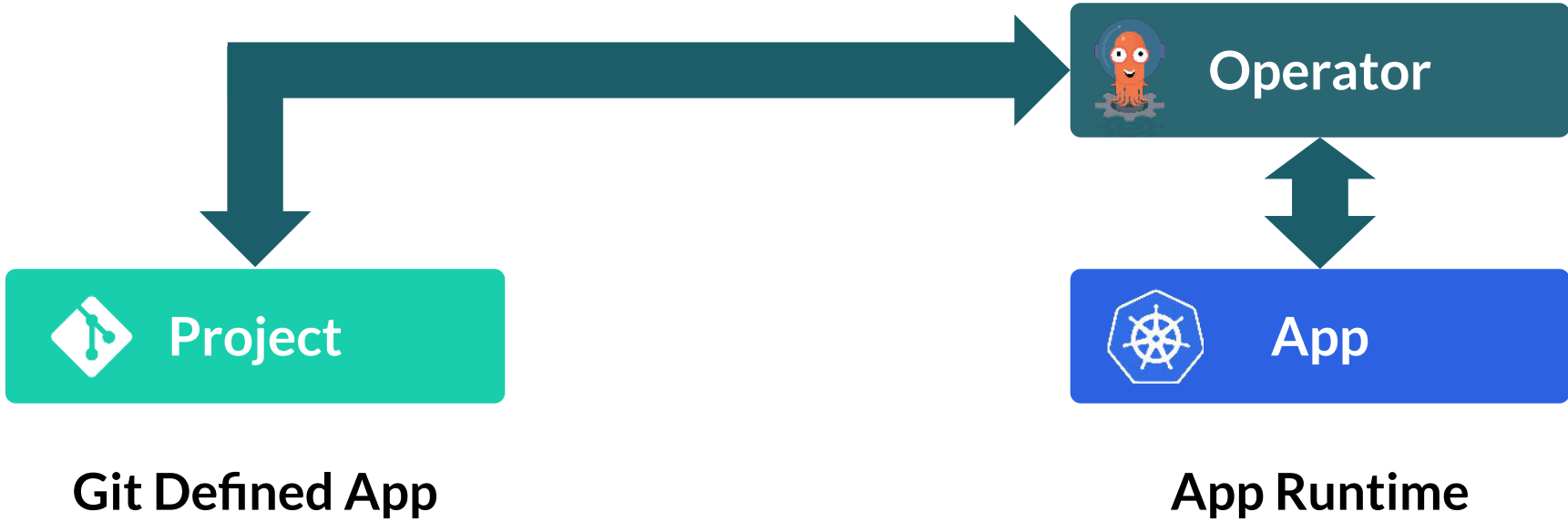
<https://www.weave.works/blog/announcing-gitops-working-group>

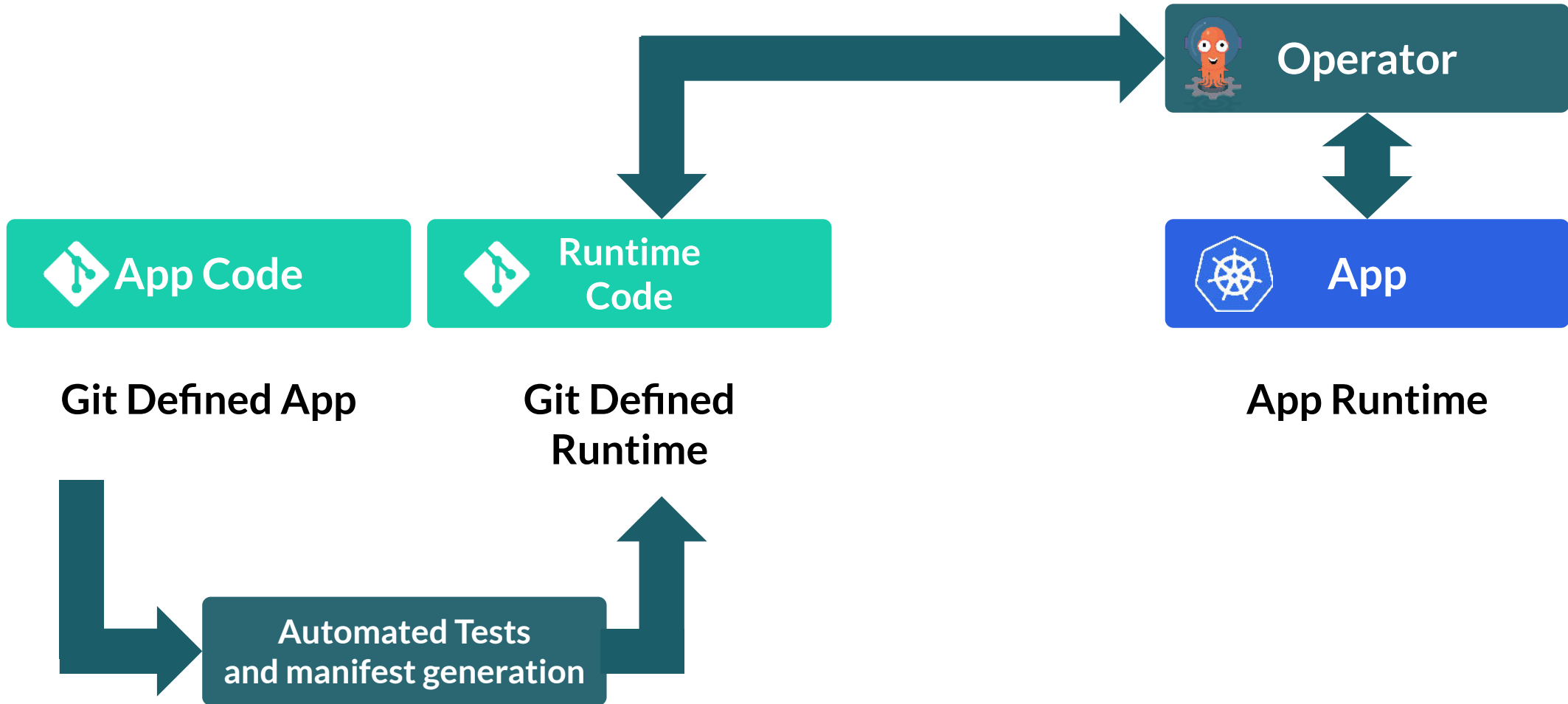


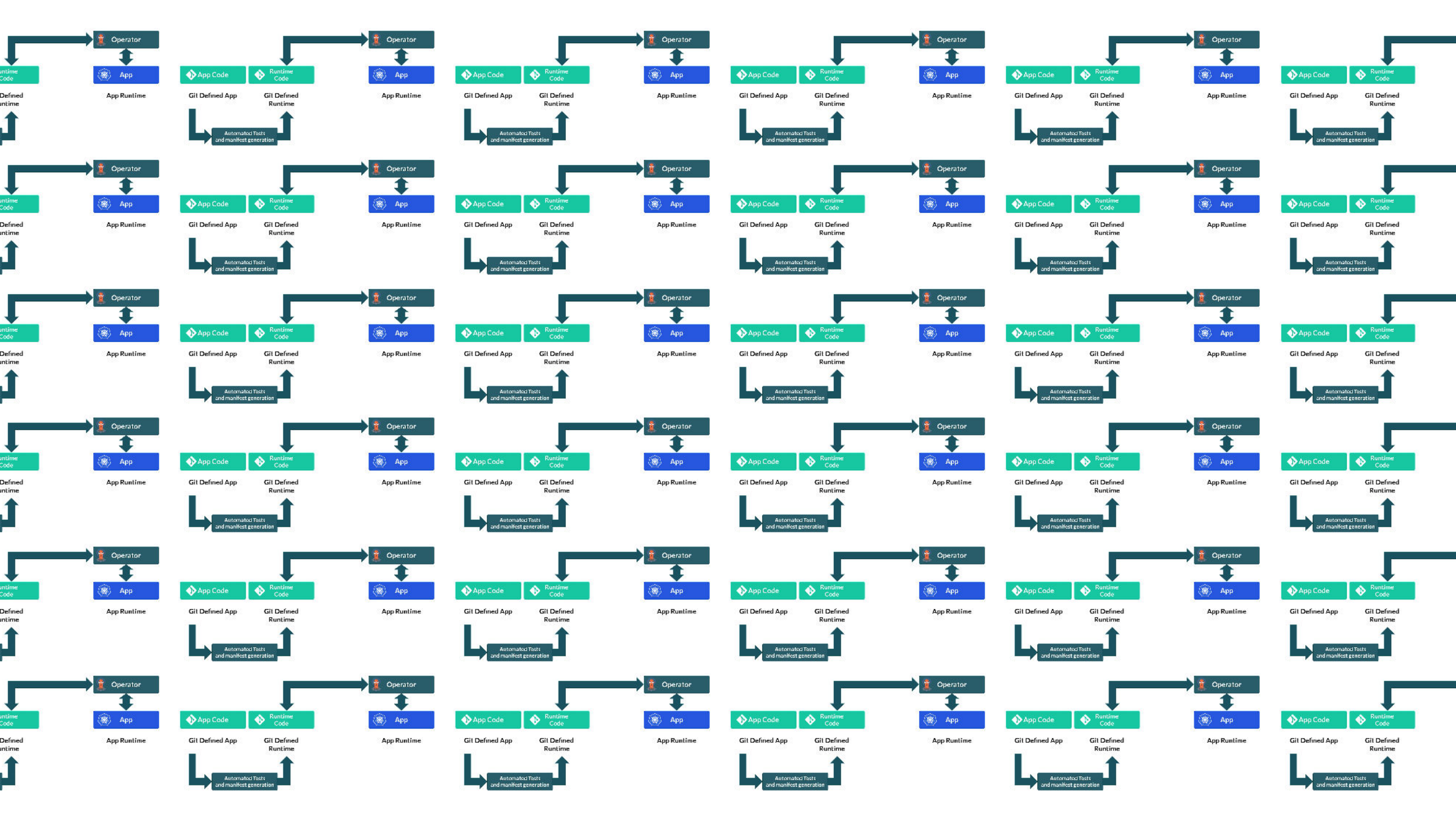
Git Defined App

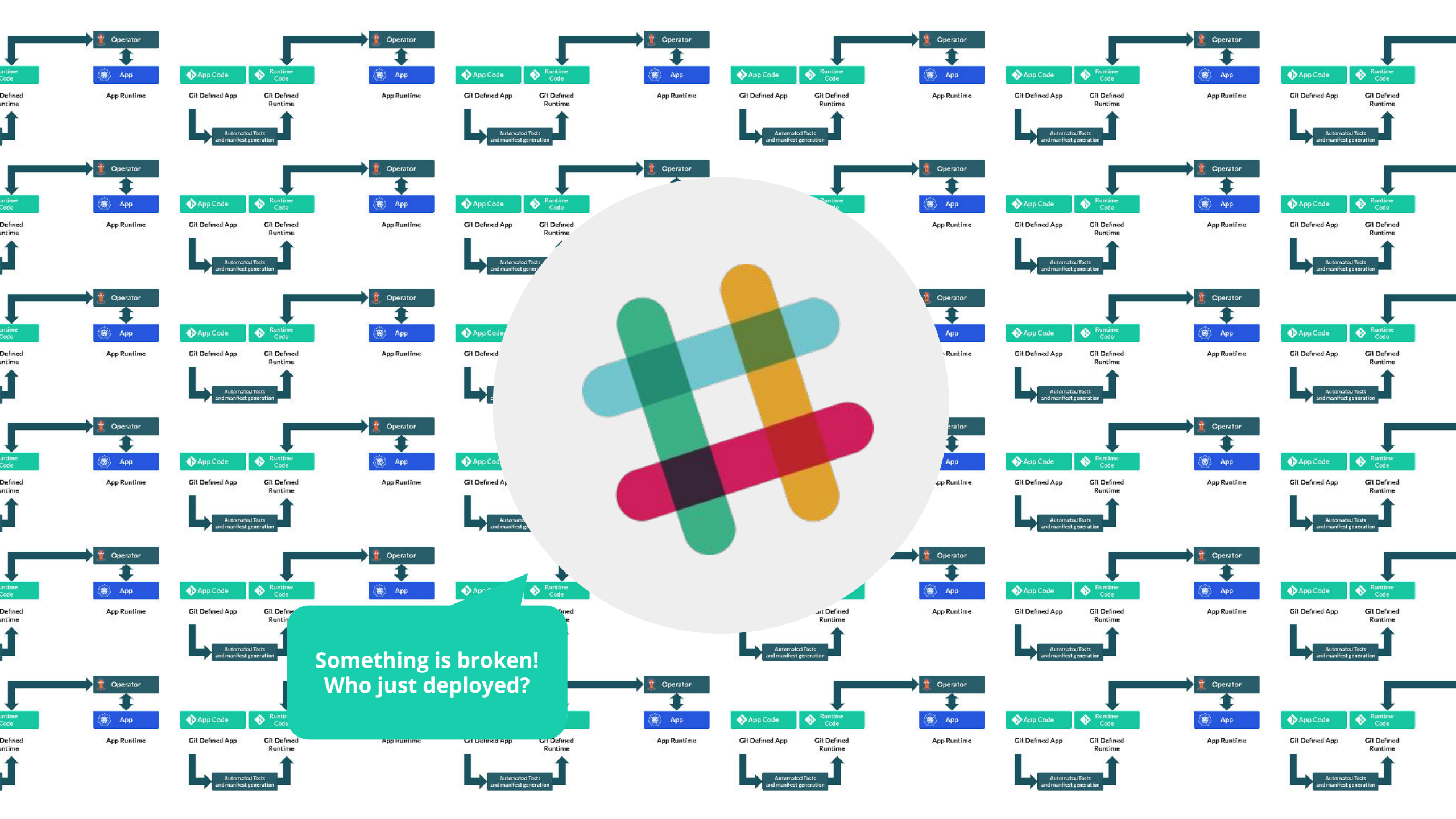


App Runtime









How do we identify regressions?

- When did a regression start?
- When did changes take place?
- What was changed?
- What issues were being addressed?
- Who worked on it?



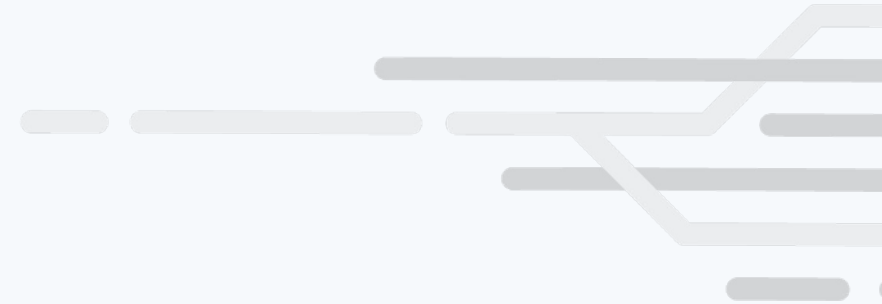
GitOps 2.0



Built for modern pipelines

NEW

The next level of GitOps, from commit to deploy.



1

Advanced declarative
Kubernetes deployments
powered by Argo CD

2

Complete GitOps CI and CD
solution from builds to
rollbacks

3

Full traceability

ROLLING OUT

SYNC Synced

URL g.codefresh.com

CLUSTER codefresh@prod

NAMESPACE default

HELM RELEASE production

SERVICES 15 0 0

DEPLOYMENTS 15 0 0

PODS 15 0 0

OPEN IN ARGO | REFRESH

ROLL OUTS SERVICES

+ ADD FILTER

Search Deployments

Date Range All

Overlay Data Select

HOUR DAY WEEK MONTH



ROLLING OUT monitoring-heartbeat / test-build-issue / 5eb7bbf4f760e68a187594f0

an hour ago 04:00s CURRENT VERSION

Pull Requests 3

Issues 6

Committers 2

#1234 #5132 #1245

SAAS-1563 SAAS-1563 SAAS-1563 SAAS-1563 SAAS-1563 SAAS-1563

Idan Arbel (iarbel) Oleg V(verchol)

Updated Services 2

Secrets 0

Config Maps 0

cf-api directxman12/k8s-prometheus-ada... 3/4 → prom/consul-exporter:v0.4.0 1/4 ROLLING OUT

NO UPDATES

myconfig View Changes

cf-ui grafana/grafana:6.6.2 0/0 → kiwigrd/k8s-sidecar:0.1.99 4/4 UPDATED

> monitoring-heartbeat / test-build-issue / 5eb7bbf4f760e68a187594f0 May 4 04:00s

> monitoring-heartbeat / test-build-issue / 5eb7bbf4f760e68a187594f0 May 4 04:00s

> runtime-cluster-monitoring / cf-installer-cli / 5eb7bbf2f760e635037594ec May 4 04:00s

Pull Requests



+ ADD FILTER

Date Range Overlay Data

10:00 12:00 14:00

▼ **ROLLING OUT** monitoring-heartbeat / test-build-issue / 5eb7bbf4f760e68a187594f0

Pull Requests 3 **Issues** 6

#1234 #5132 #1245 SAAS-1563 SAAS-1563 SAAS-1563 SAAS-1563

Updated Services 2

cf-api directxman12/k8s-prometheus-ada... 3/4 → prom/consul-exporter:v0.4.0 1/4

cf-ui grafana/grafana:6.6.2 0/0 → kiwigrd/k8s-sidecar:0.1.99 4/4

> monitoring-heartbeat / test-build-issue / 5eb7bbf4f760e68a187594f0

> monitoring-heartbeat / test-build-issue / 5eb7bbf4f760e68a187594f0

> runtime-cluster-monitoring / cf-installer-cli / 5eb7bbf2f760e635037594ec

Jira Issues



+ ADD FILTER

Date Range: All | Overlay Data: Select

▼ **ROLLING OUT** monitoring-heartbeat / test-build-issue / 5eb7bbf4f760e68a187594f0

Pull Requests 3 | **Issues** 6

#1204 | #5102 | #1204 | SAAS-1563 | SAAS-1563 | SAAS-1563 | SAAS-1563

Updated Services 2

cf-api	directxman12/k8s-prometheus-ada...	3/4	→	prom/consul-exporter:v0.4.0	1/4
cf-ui	grafana/grafana:6.6.2	0/0	→	kiwigrd/k8s-sidecar:0.1.99	4/4

> monitoring-heartbeat / test-build-issue / 5eb7bbf4f760e68a187594f0

> monitoring-heartbeat / test-build-issue / 5eb7bbf4f760e68a187594f0

> runtime-cluster-monitoring / cf-installer-cli / 5eb7bbf2f760e635037594ec

Updated Services



+ ADD FILTER

Date Range Overlay Data

▼ **ROLLING OUT** monitoring-heartbeat / test-build-issue / 5eb7bbf4f760e68a187594f0

Pull Requests 3 **Issues** 6

#1234 #5132 #1245 SAAS-1563 SAAS-1563 SAAS-1563 SAAS-1563

Updated Services 2

cf-api directxman12/k8s-prometheus-ada... 3/4 → prom/consul-exporter:v0.4.0 1/4

cf-ui grafana/grafana:6.6.2 0/0 → kiwigrd/k8s-sidecar:0.1.99 4/4

> monitoring-heartbeat / test-build-issue / 5eb7bbf4f760e68a187594f0

> monitoring-heartbeat / test-build-issue / 5eb7bbf4f760e68a187594f0

> runtime-cluster-monitoring / cf-installer-cli / 5eb7bbf2f760e635037594ec

Deployment Timeline



+ ADD FILTER

Date Range

All

Overlay Data

Select



ROLLING OUT

monitoring-heartbeat / test-build-issue / 5eb7bbf4f760e68a187594f0

Pull Requests

3

Issues

6

#1234

#5132

#1245

SAAS-1563

SAAS-1563

SAAS-1563

SAAS-1563

Updated Services

2

cf-api

directxman12/k8s-prometheus-ada...

3/4



prom/consul-exporter:v0.4.0

1/4

cf-ui

grafana/grafana:6.6.2

0/0



kiwigrd/k8s-sidecar:0.1.99

4/4



monitoring-heartbeat / test-build-issue / 5eb7bbf4f760e68a187594f0



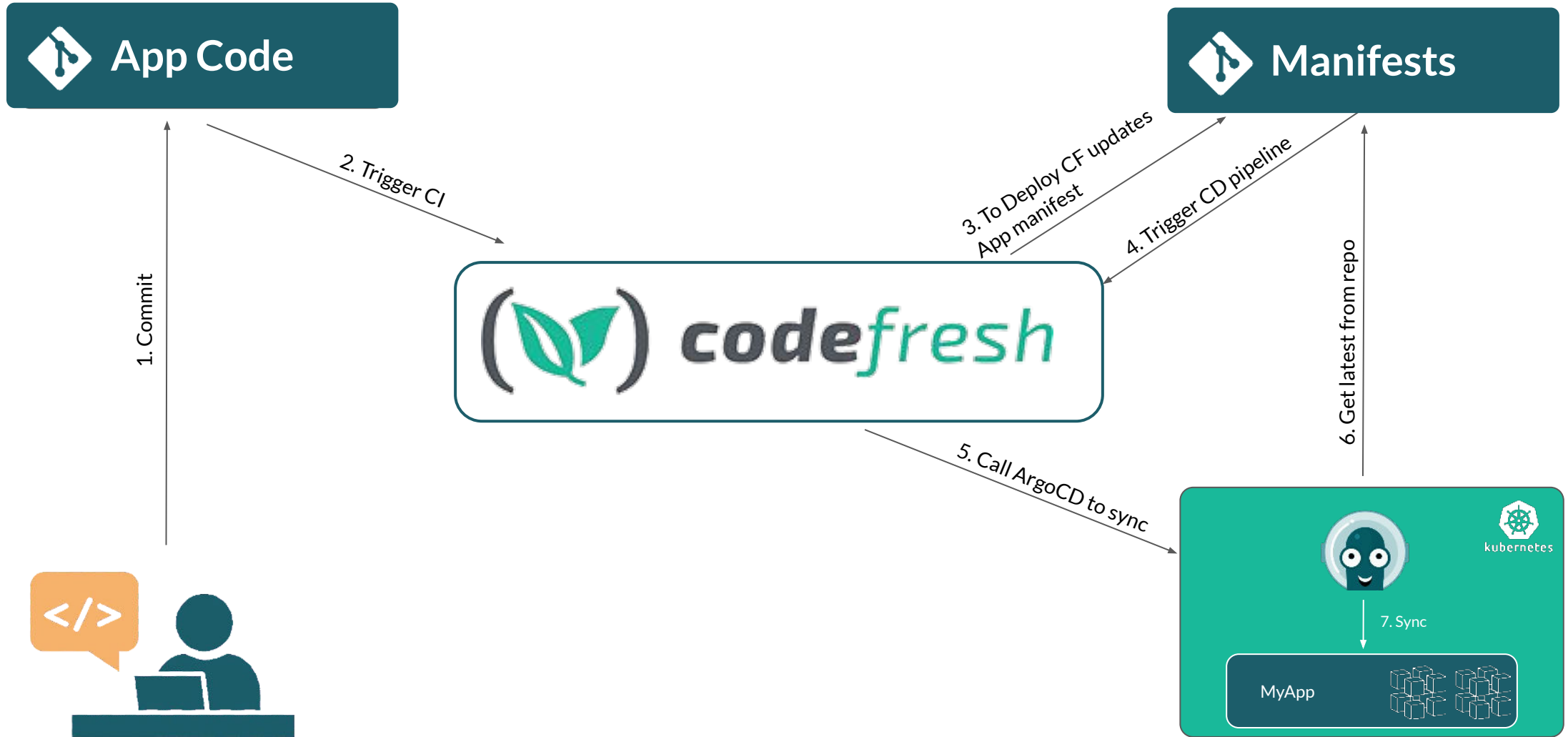
monitoring-heartbeat / test-build-issue / 5eb7bbf4f760e68a187594f0



runtime-cluster-monitoring / cf-installer-cli / 5eb7bbf2f760e635037594ec



GitOps





ROLLING OUT SYNC Synced URL g.codefresh.com CLUSTER codefresh@prod NAMESPACE default HELM RELEASE production SERVICES 15 0 0 DEPLOYMENTS 15 0 0 PODS 15 0 0 OPEN IN ARGO REFRESH

DASHBOARD ROLL OUTS SERVICES MAP Date Range All

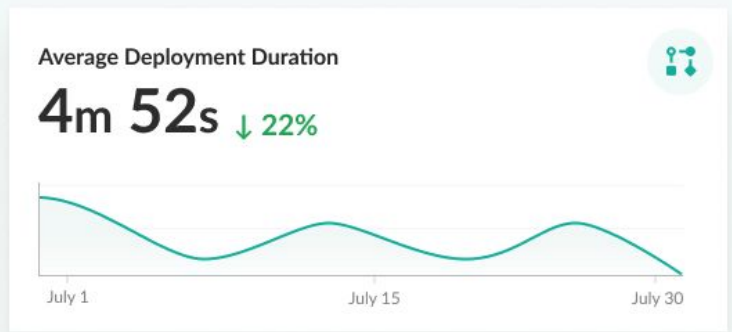
LAST DEPLOYMENT

1 day ago

6
Issues

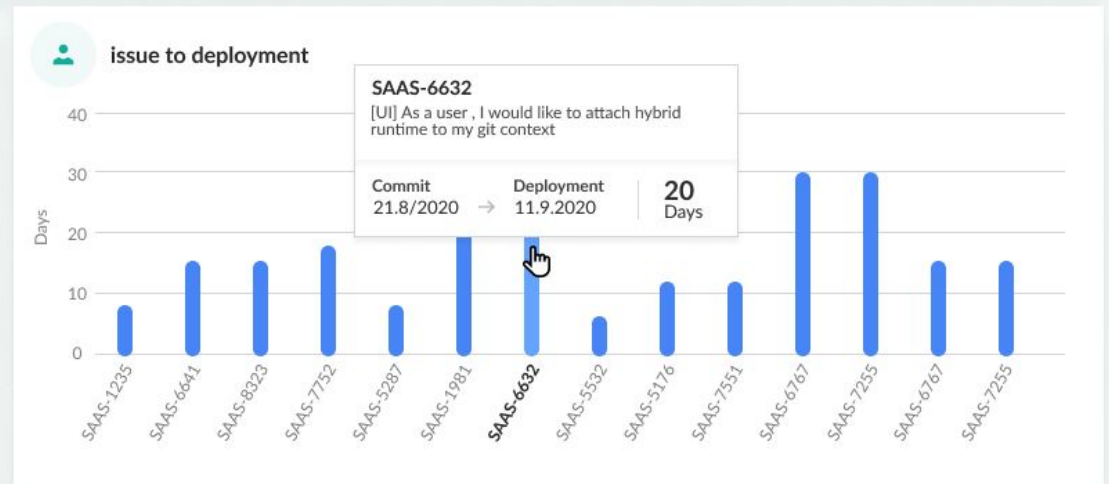
2
PRs

1
Services



Top updated services

#	Service	Updates
1 ↑(1)	cf-api	15
2 ↑(1)	dind	11
3 ↑(1)	steps	8
4 ↑(1)	nginx	6
5 ↑(1)	boradcaster	3



CUSTOMER STORY

Victor Cuascut | Veeva Systems



Where We Started

Building a
Infrastructure from Scratch





So why GitOps?

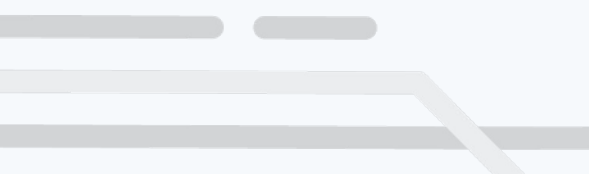


1 Simplicity

2 Speed

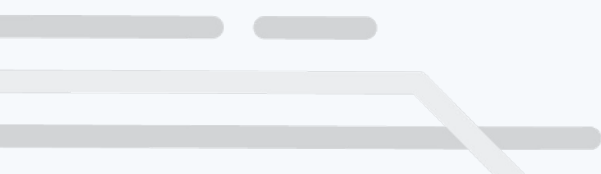
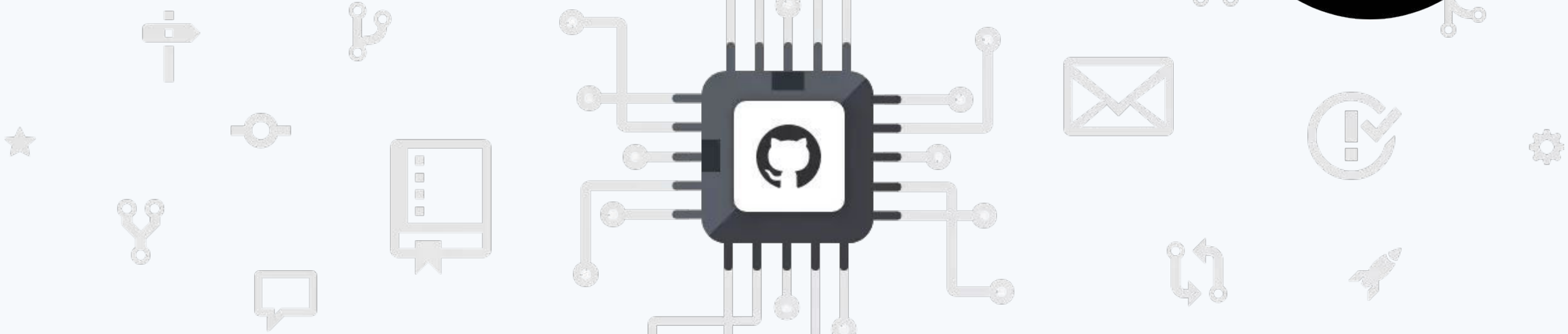
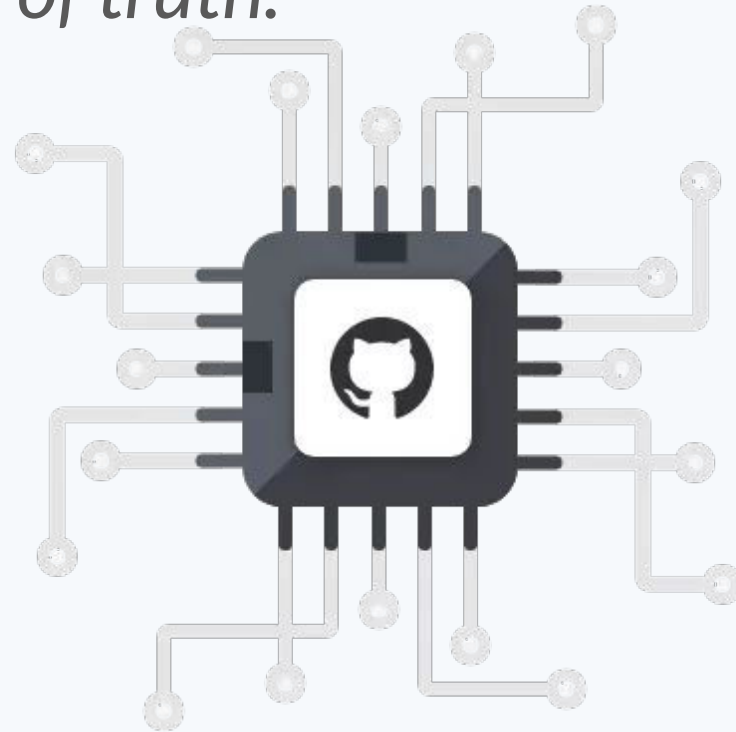
3 Reproducible

4 Auditable

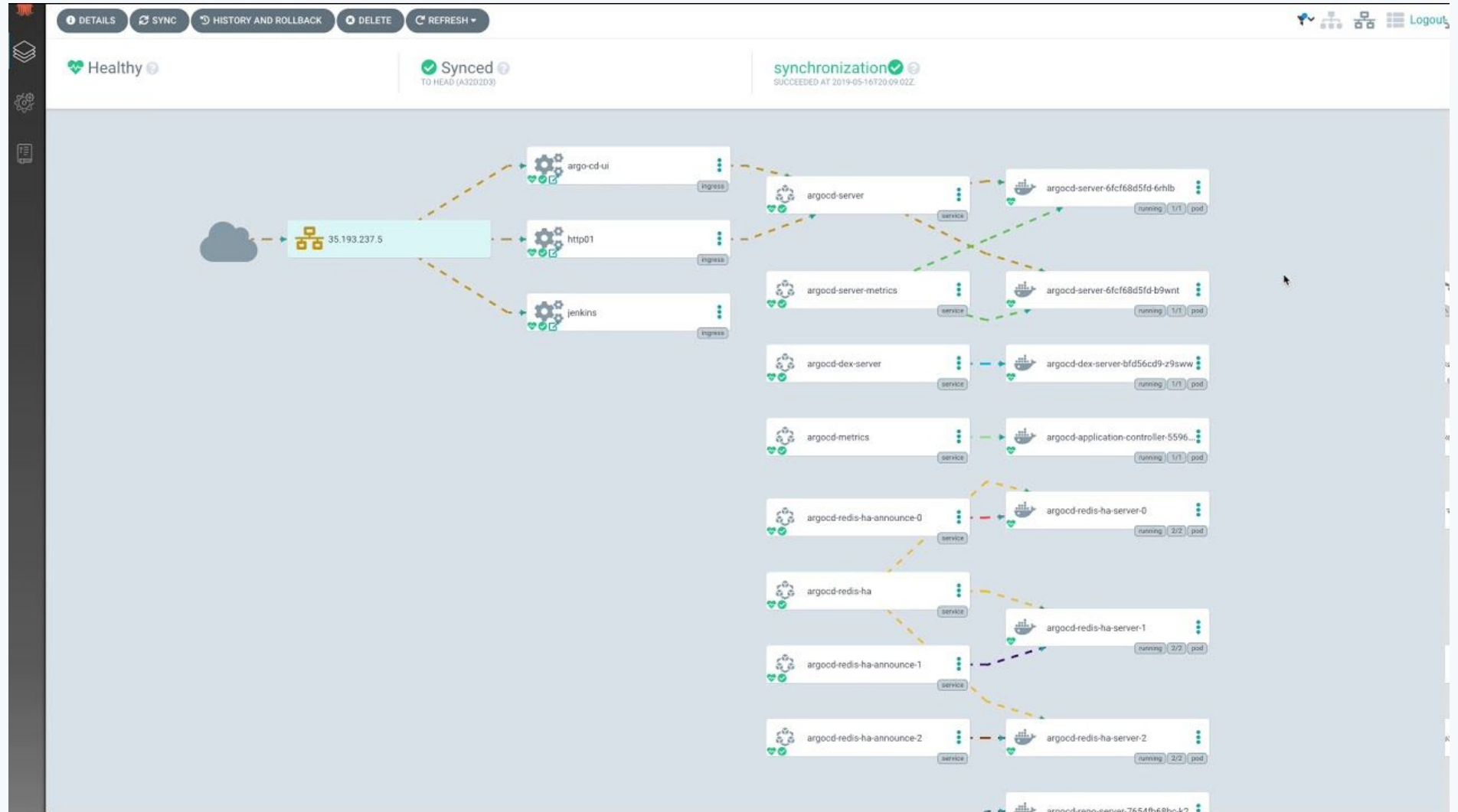




*This is what Gitops provided us.
All with a single source of truth.*

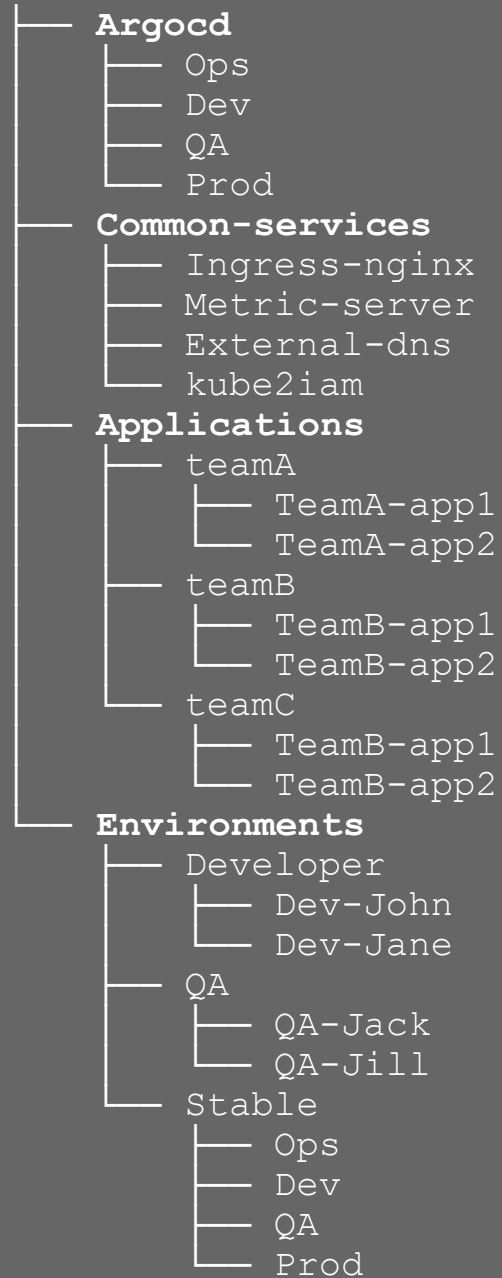


Veeva





Breaking down your Repo

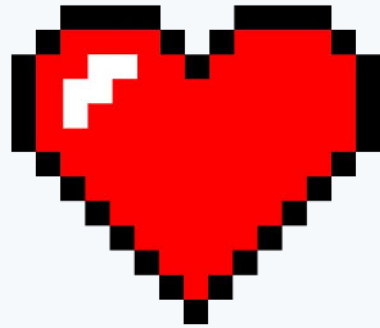


Veeva

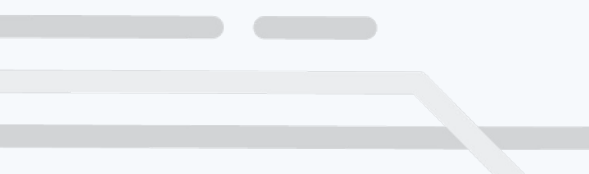
Reusable Templates



kubernetes



argo





Kustomize

base.yaml

```
apiVersion: v1
kind: Pod
metadata:
  name: myapp
  labels:
    app: myapp
spec:
  containers:
  - name: myapp
    image: myimage
    command: ['app']
```



patch.yaml

```
apiVersion: v1
kind: Pod
metadata:
  name: myapp
  labels:
    env: dev
spec:
  containers:
  - name: myapp
    image: myimage:dev
    command: ['app', '-dev']
```



output.yaml

```
apiVersion: v1
kind: Pod
metadata:
  labels:
    app: myapp
    env: dev
  name: myapp
spec:
  command:
  - 'app'
  - '-dev'
  containers:
  - name: myapp
    image: myimage:dev
```



What to do with all of our Helm Charts?

patch-elb.yaml

```
ingress-nginx
├── base
│   ├── Makefile
│   ├── values.yaml
│   ├── ingress.yaml
│   └── kustomization.yaml
└── overlays
    └── dev
        ├── kustomization.yaml
        └── patch-elb.yaml
```

```
CHART_VERSION=3.11.1

search:
  helm search repo ingress-nginx/ingress-nginx
update:
  helm template \
    ingress-nginx/ingress-nginx \
    --name-template=k8s \
    --values values.yaml \
    --version=${CHART_VERSION} \
    > ingress.yaml
```

Makefile

```
apiVersion: v1
kind: Service
metadata:
  annotations:
    service.beta.kubernetes.io/aws-load-balancer-backend-protocol: http
    service.beta.kubernetes.io/aws-load-balancer-connection-idle-timeout: '60'
    service.beta.kubernetes.io/aws-load-balancer-cross-zone-load-balancing-enabled: 'true'
    service.beta.kubernetes.io/aws-load-balancer-ssl-cert:
arn:aws:acm:us-east-1:123456789:certificate/12345678-1234-1234-1234-12345678
    service.beta.kubernetes.io/aws-load-balancer-ssl-ports: https
    service.beta.kubernetes.io/aws-load-balancer-type: elb
    external-dns.alpha.kubernetes.io/hostname: stable.dev.acme.com
  name: ingress-nginx-controller
```



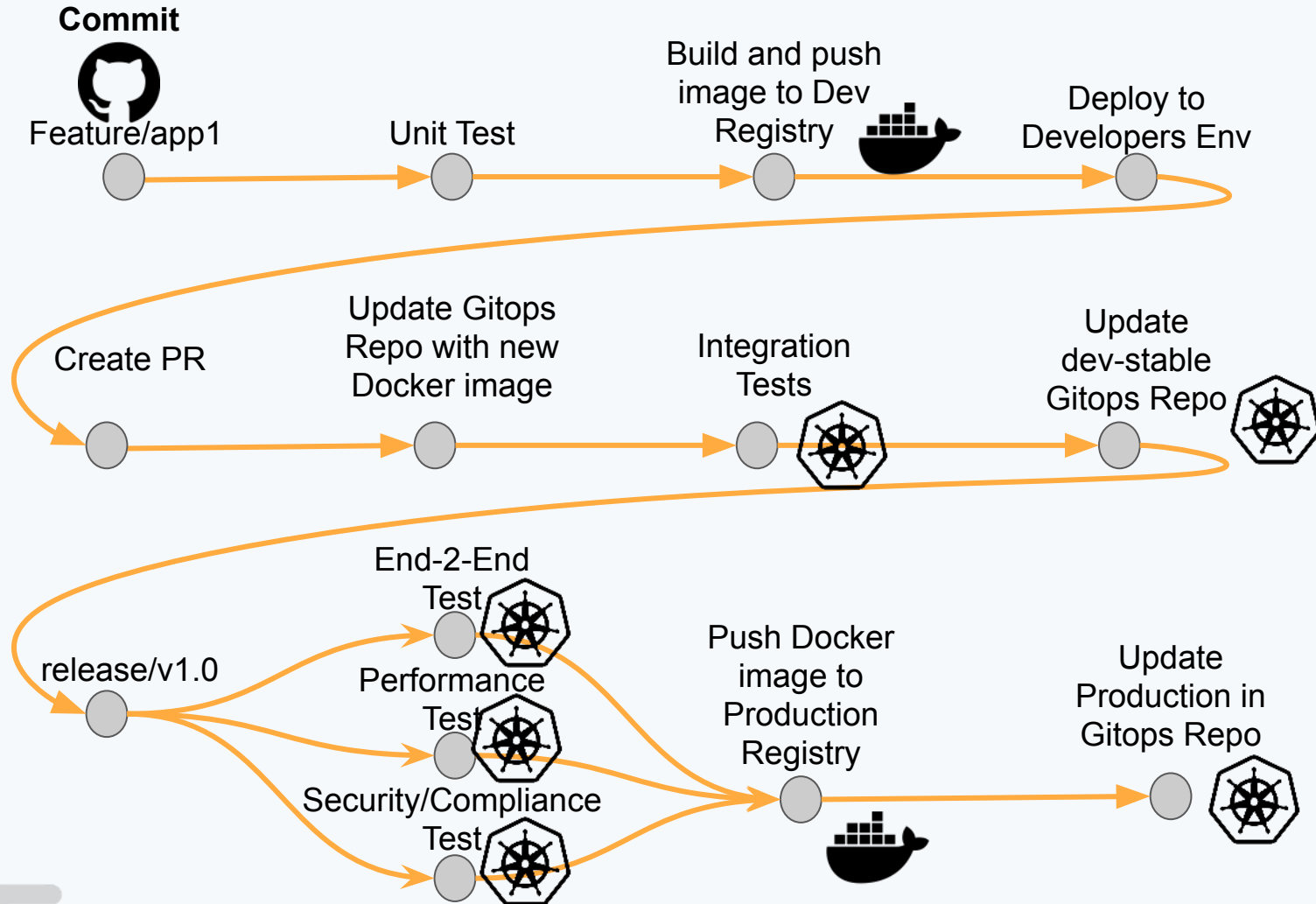

Codefresh and ArgoCD

The screenshot displays the Codefresh GitOps dashboard. On the left is a teal sidebar with navigation options: Getting Started, BUILD → TEST → DEPLOY (Projects, Pipelines, Builds, Steps), DEVOPS INSIGHTS (Kubernetes, Helm, GitOps, Enviroments), ARTIFACTS (Images, Helm Charts, Compositions), and SETTINGS (Account Settings, User Settings). The main content area is titled 'GitOps' and includes a search bar, '+ ADD APPLICATION' button, and pagination controls. A table lists applications with columns for Application, Source, Destination, Last Update, and Status. A tooltip for the 'app-of-apps' application shows details about a recent deployment: 'feat: use one configmap to read triggers...' with a green checkmark, dated July 4, 2020 at 21:14. The tooltip also lists '0 Updated Services', '6 Issues', and '2 Pull Requests', along with a 'Go to Deploymnet' link.

APPLICATION	SOURCE	DESTINATION	LAST UPDATE	STATUS
★ app-of-apps	https://github.com/argoproj/argocd	argocd	July 25, 2020 21:12	SYNCD SUSPENDED
★ guestbook	...github.com/argoproj/argocd	argoproj	July 25, 2020 12:33	SYNCD MISSING
★ helm-guestbook	...com/argoproj/argocd-e	ync-waves	July 23, 2020 5:50	SYNCD HEALTHY
★ helm-hooks	...ithub.com/argoproj/arg	argocd	July 20, 2020 12:30	SYNCD PROGRESSING
★ Kustomize-guestbook	.../argoproj/argocd-example-apps/kustomise-guestbook	in-cluster/ingress	July 15, 2020 20:20	SYNCD ROLLING BACK
★ sockshop	...://github.com/argoproj/argocd-example-apps/sockshop	in-cluster/prometheus-operator	July 15, 2020 14:10	SYNCD SUSPENDED
★ sync-waves	...github.com/argoproj/argocd-example-apps/sync-waves	in-cluster/argocd	July 13, 2020 10:10	SYNCD UNKNOWN
★ argoproj	...ps://github.com/argoproj/argocd-example-apps/plugins	in-cluster/argoproj	July 12, 2020 9:12	SYNCD DEGRADED
★ blue-green	...github.com/argoproj/argocd-example-apps/blue-green	in-cluster/argocd	July 12, 2020 11:40	SYNCD HEALTHY
★ pre-post-sync	...hub.com/argoproj/argocd-example-apps/pre-post-sync	in-cluster/ingress	July 1, 2020 12:15	SYNCD HEALTHY



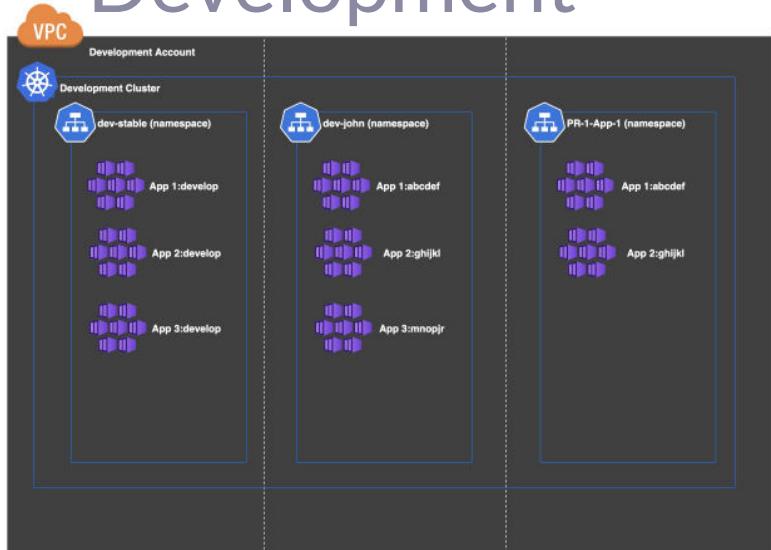
Continuous Integration & Automated Continuous Deployment



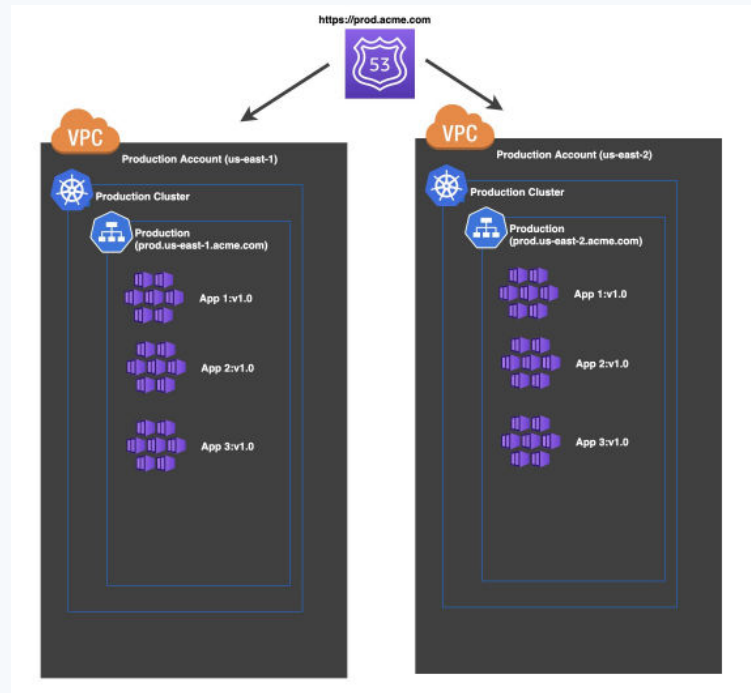


Deployed Infrastructure

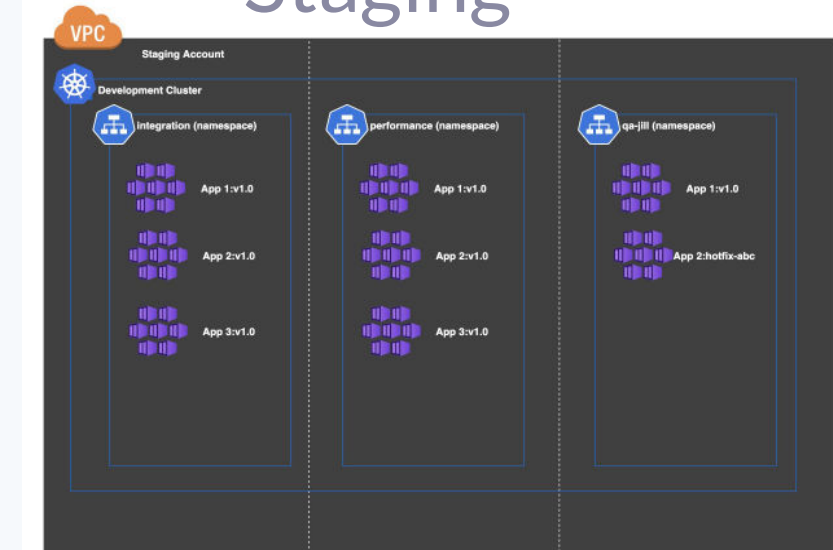
Development



Production



Staging



LIVE DEMO

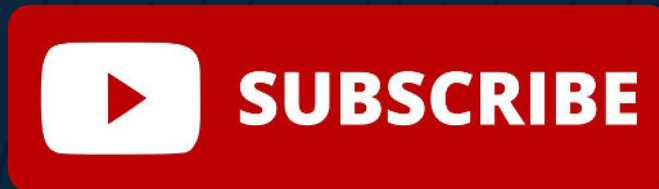
Viktor Farcic

Q/A

Unit & integration testing
Declarative infrastructure
PR
Endless integrations
GitOps
iOS & Android builds
Git providers
Parallel builds & deployments
gin hell
ty scans
Containers
ss
Binary releases
Kubernetes
Easy fixes =
More complex
Shared dependencies
Provisioning
deployment patterns
Microservices = tons of pipelines
g updates
Blue/green deployments
Scaling pipeline variations
Monorepo

Want more?

Livestream discussion with Viktor & Victor on
our Codefresh Youtube channel on [12/15](#)





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DevOps automation**

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