



DEVOPS DAY RALEIGH, APRIL 11TH 2024

Autonomy vs. Standardization Platform Engineering, CNOE



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(he/him)

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AWS

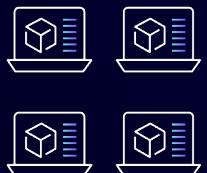
Standardization vs. Autonomy: The Platform Engineering Balance



Teams



Applications



Infrastructure



Amazon EKS



Amazon EC2



Amazon S3



Amazon EBS



ELB



Amazon Route 53



Amazon Redshift



Amazon EMR



Amazon RDS



ElastiCache

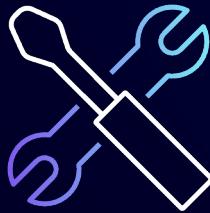


Amazon Aurora



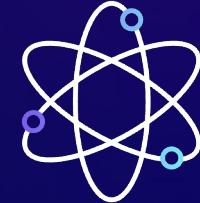
Amazon SNS

Infrastructure management spectrum



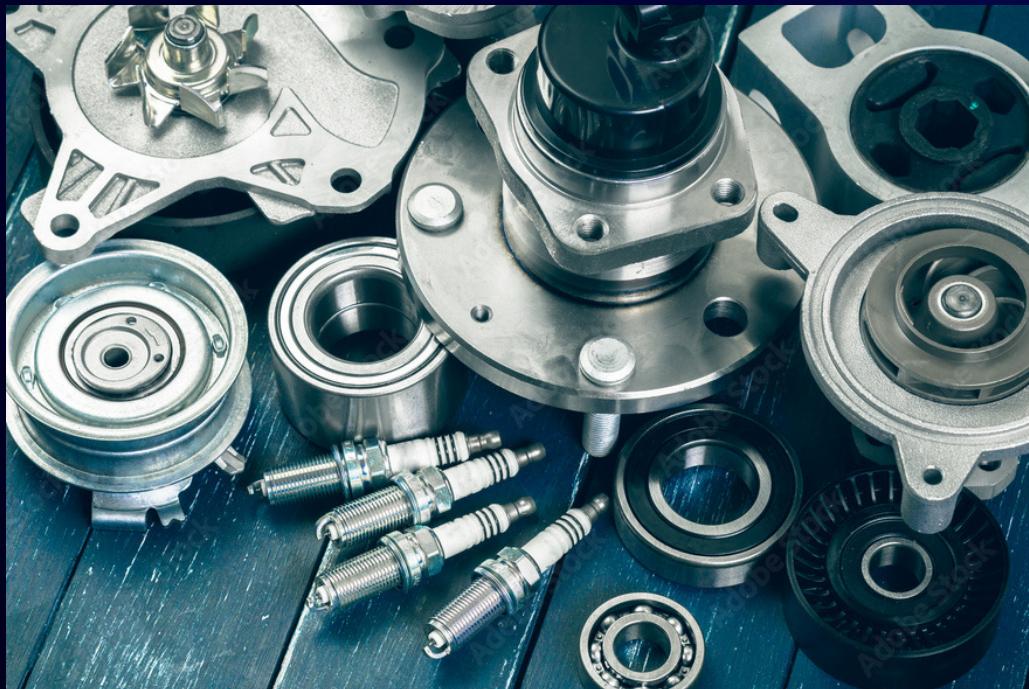
Decentralized

Application teams deploy and maintain their own infrastructure

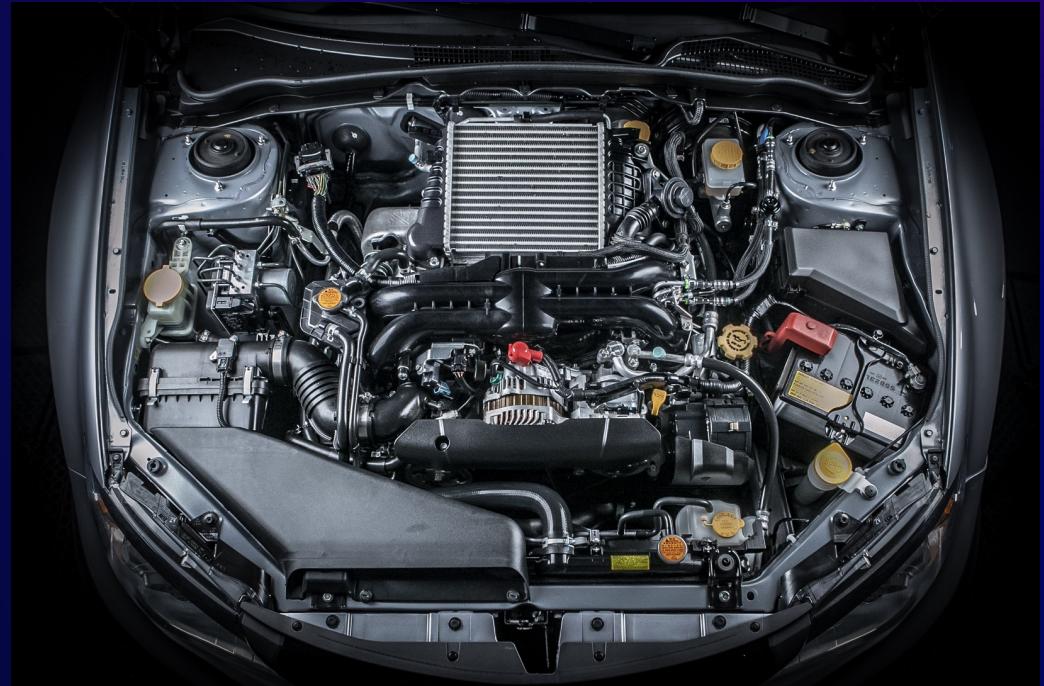


Centralized

Infrastructure is completely managed on behalf of application teams



VS.



Customer examples on EKS



The New York Times

The New York Times Has Over 10 Million Subscribers

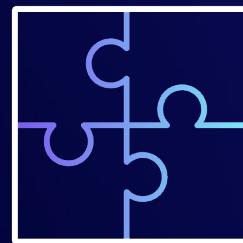


Customer benefits from building an **internal platform**



Velocity

Reduce the time it takes to get new applications in front of customers



Governance

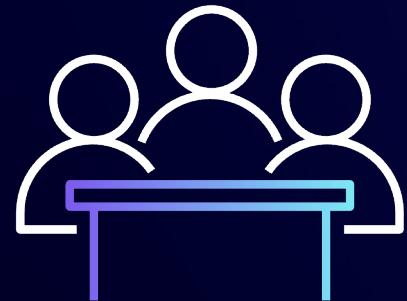
Ensure application teams operate safely and securely in the cloud



Efficiency

Optimize spend via efficient resource utilization and specialization

Let the battle begin !!!!



Platform
builders



App developers &
data scientists

Standards



Autonomy

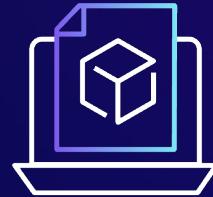
Autonomy and standards



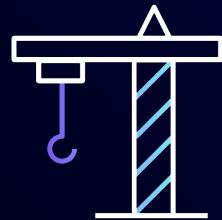
Challenge areas



Ownership



Level of abstraction



Adoption



Troubleshooting

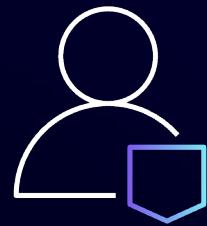
Example: I want my app to run in isolation

What do you mean
by **isolation**?



- Account
- Region
- Availability
- Network segmentation
- Clusters
- Compute
- Namespace
- Virtual clusters

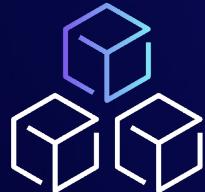
Platform design patterns



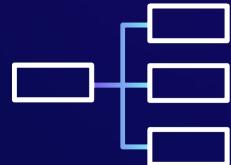
**Account
as a Service**



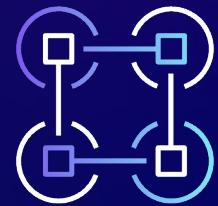
**Template
as a Service**



**Cluster
as a Service**

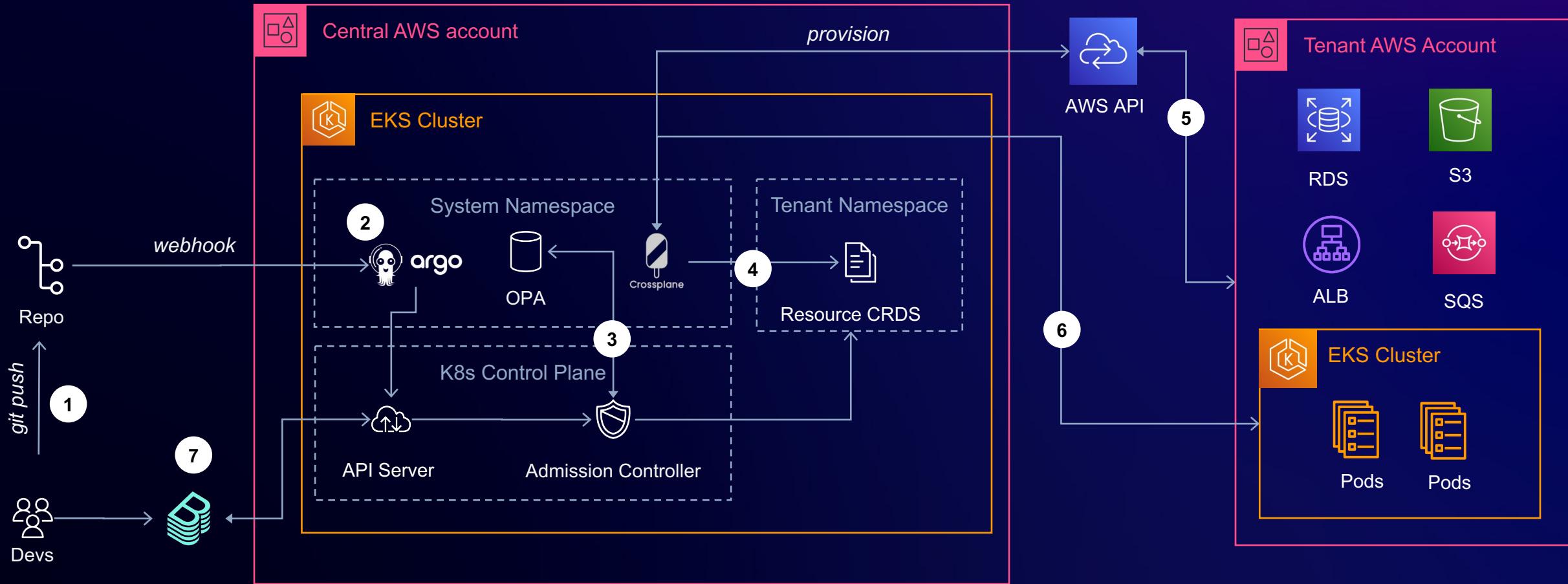


**Namespace
as a Service**



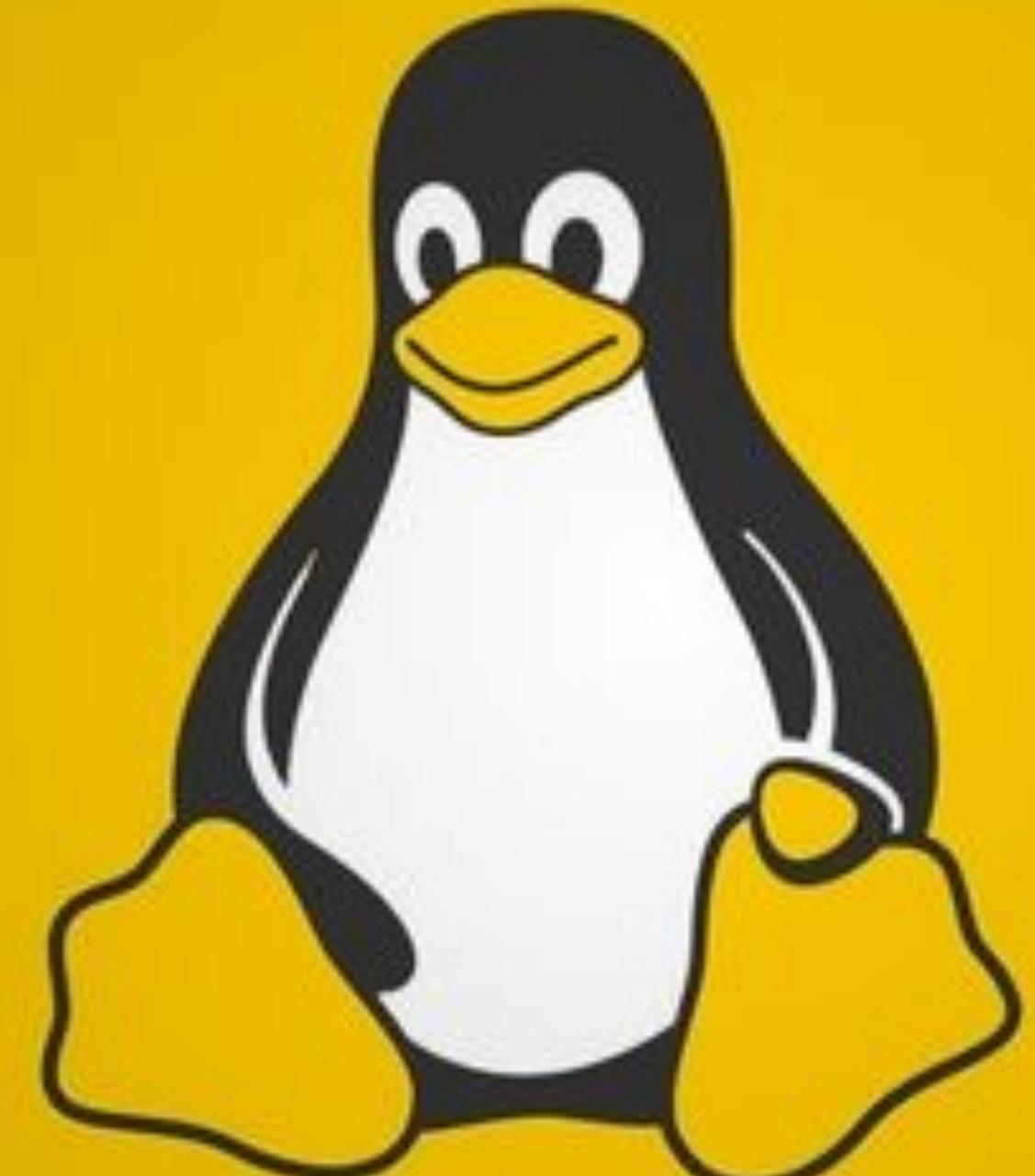
**Platform
as a Service**

Building a platform with Kubernetes in practice



A **Linux distro**

is an operating system
made from a software
collection that is based
upon **the Linux kernel**
and, often, a package
management system.



An IDP Distribution

is a developer platform
made from a software
collection that is based
upon *Kubernetes*, as well
as a package
management system.



**CNOE is an
internal developer platform (IDP) *distribution*
built in the open
in collaboration with the user community
powered by CNCF technologies**



Accelerate building your IDP



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Developer Portal Best Practices

- Backstage plugins
- Developer practices

<https://cnoe.io/blog/optimizing-data-quality-in-dev-portals>

Optimizing for Data Quality in your Developer Portal

November 6, 2023 · 9 min read



Greg Haynes

Architect, Autodesk



Blake Romano

Software Engineer, Imagine Learning



Jesse Sanford

Architect, Autodesk



Kyle Smith

Software Engineer, Segment - Twilio



Manabu McCloskey

Architect, AWS



Nima Kavani

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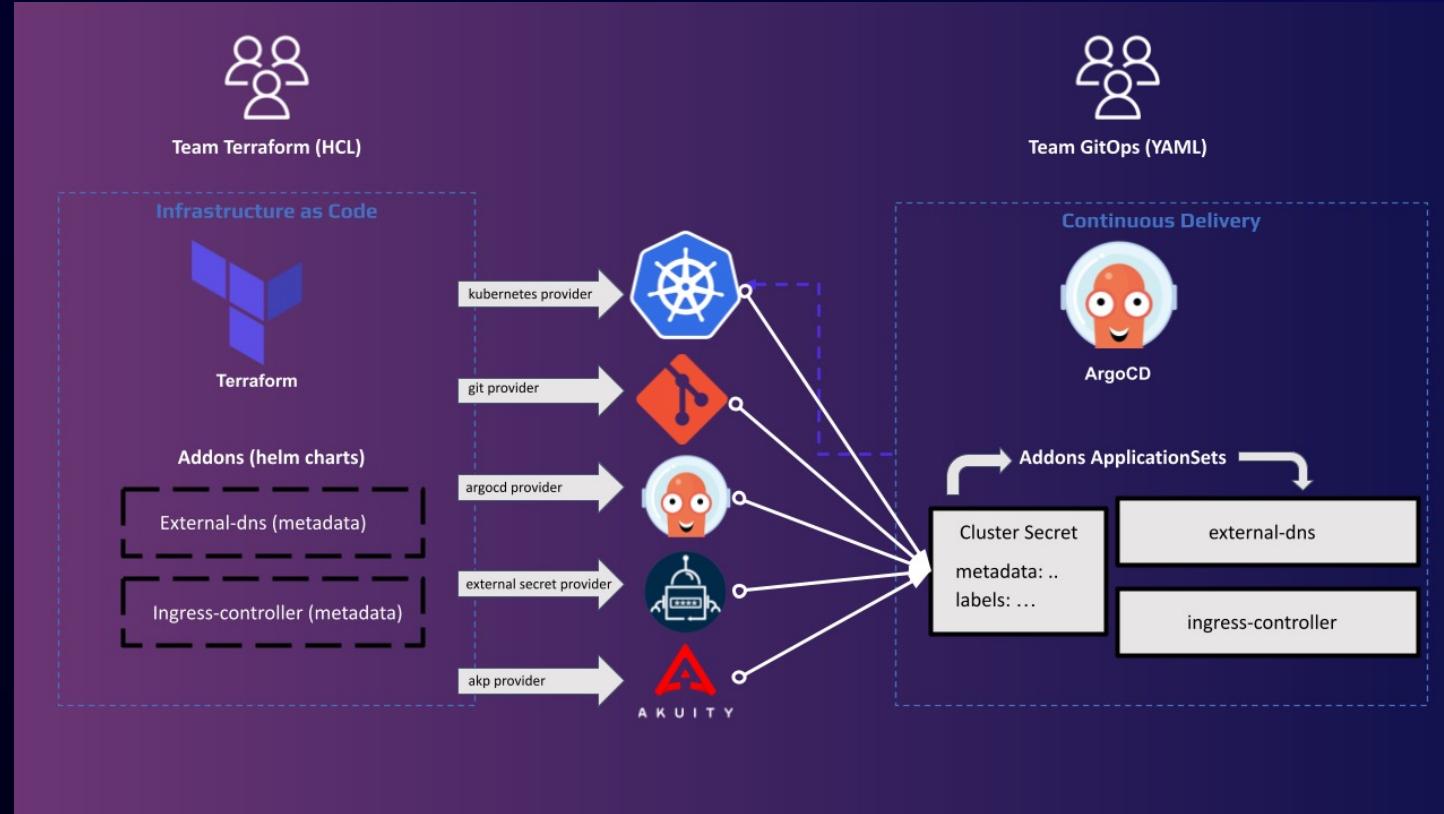


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SWA_fatidika
portunes assas
driivka emin



GitOps Bridge

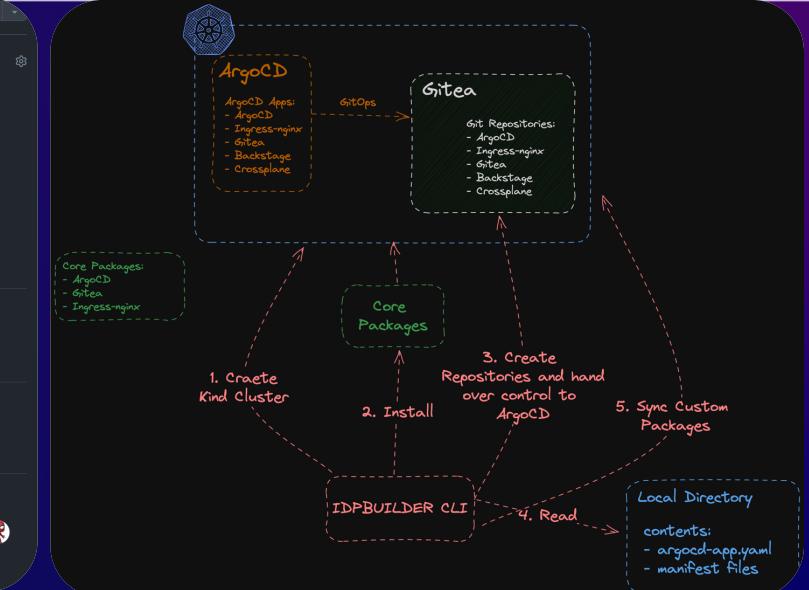
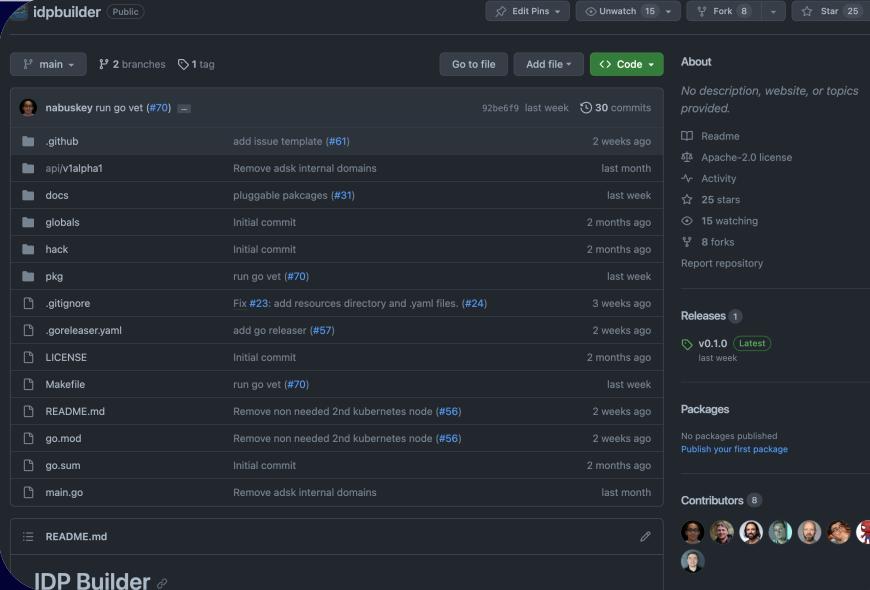


<https://github.com/gitops-bridge-dev>



idpBuilder

github.com/cnoe-io/idpbuilder



htop output:

Total	Used	Free
7.75 GiB	4.70 GiB	3.05 GiB
61%	21%	39%
Available: 3.05 GiB	Used: 25% 124 MiB	Free: 75% 500 MiB

proc filter output:

Pid	Program	Command	Threads	per-core	reverse	tree	cputime	Cpu%
6361	argod-apiserver	/usr/local/bin/argod-apiserver	76	1x0	398M	25.2	0.0
6360	argod-worker	/usr/local/bin/argod-worker	1	1x0	1.5M	16.0	0.0
6364	bash	/bin/bash	34	1x0	345M	55.0	0.0
6365	watch	/home/atchison/.vscode-server/bin/atchison/1.70.0	6	1x0	31M	40%	0.0
60569	contained	/usr/local/bin/container	13	1x0	78M	43%	0.0
81004	docker	docker exec -i -u vscode	7	1x0	23M	0.0	0.0
63631	crossplane	crossplane core serve	7	0x552	218M	0.0	0.0
63632	etcd	etcd --advertise-client-urls	1	1x0	15M	1.1	0.0
67268	gitea	/usr/local/bin/gitea	16	1x0	138M	0.0	0.0
61523	kubet	/usr/bin/kubet --boots	14	1x0	94M	1.1	0.0
28249	node	/vscode/vscode-server/bin/1.70.0	12	1x0	139M	0.0	0.0
74297	crossplane-aws	crossplane-aws-provider	11	0x800	73M	0.0	0.0
72236	node-controller	/vscode/vscode-server/bin/1.70.0	7	1x0	103M	0.0	0.0
75983	postgres	postgres: keycloak keycl	1	1x0	26M	0.0	0.0
66686	argod-repo-dep	/usr/local/bin/argod-dep	16	1x0	85M	0.1	0.0
70089	external-secret	[bin/external-secrets]	9	1x0	123M	0.0	0.0
71857	kube-scheduler	kube-scheduler --authent	9	1x0	41M	0.0	0.0
34565	dockerd	/usr/local/bin/dockerd	10	1x0	110M	0.0	0.0
871	dockerd	/usr/bin/dockerd -H fd://	14	1x0	93M	0.1	0.0
2178	btop	btop	15	1x0	6.5M	0.1	0.0
11683	dockerd	dockerd	11	1x0	1.5M	0.1	0.0
64873	nginx-ingress-c	/nginx-ingress-controller	11	1x0	36M	0.0	0.0
12206	node	/vscode/vscode-server/bin/1.70.0	11	1x0	90M	0.1	0.0
28298	node	/vscode/vscode-server/bin/1.70.0	7	1x0	97M	0.0	0.0
68427	systemd	/sbin/init	1	1x0	10M	0.0	0.0
35029	node	/home/atchison/.vscode-	12	1x0	154M	0.0	0.0
76159	postgres	postgres: keycloak keycl	1	1x0	17M	0.0	0.0
73326	node-work-contro	node-workflow-controller	11	0x737	80M	0.0	0.0
69825	external-secret	/bin/external-secret	10	1x0	68M	0.0	0.0
67594	worker	/bin/worker/1.1h-kbl	1	1x0	68M	0.0	0.0
66236	redis-server	redis-server +6379	5	1x0	8.2M	0.0	0.0
68428	worker	/bin/worker/0:81	1	1x0	0.8M	0.0	0.0
62559	coredns	/coredns -conf /etc/core	10	1x0	33M	0.0	0.0
42	kompatd@0	runc init	9	1x0	35M	0.0	0.0
71256	crossplane	crossplane rbac start --	7	0x5532	37M	0.0	0.0
12438	node	/vscode/vscode-server/bin/1.70.0	12	1x0	65M	0.0	0.0
74439	master@31:1H	master@31:1H	1	1x0	0.8M	0.0	0.0

dstat output:

Device	rx/s	tx/s	err/s	drop/s
eth0	2.76 KiB/s	(22.1 KiB/s)	0	0
eth1	Top: 759 MiB/s	Y Total: 5.64 GiB/s	0	0
eth2	Top: 1.16 MiB/s	Y Total: 1.16 MiB/s	0	0

The screenshot shows a browser window with several tabs open, indicating a development environment setup. The tabs include:

- Gitea: Git with a cup of coffee
- Applications Tiles - Argocd
- 503 Service Temporarily
- 503 Service Temporarily
- Applications Tiles - Argocd
- Paused

The main content area displays Jenkins logs for a pipeline named "devcontainer". The logs show the creation of an IDP (Identity Provider) and the configuration of ArgoCD. Key log entries include:

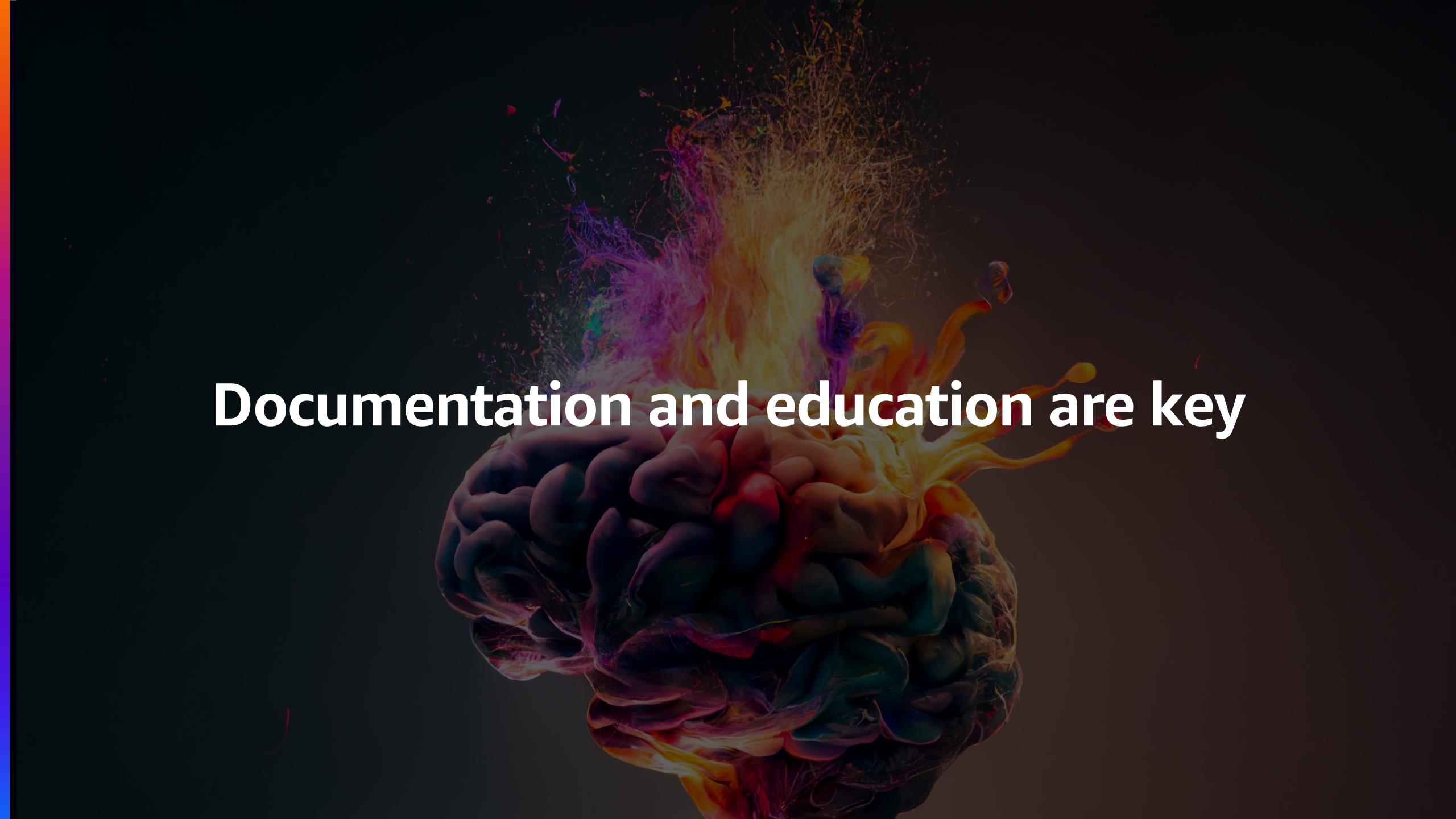
```
ev reconciledID=d75ffcc8-3778-4f9-9ed-749a9c271b5
time=2024-03-17T01:50:38.201Z level=INFO msg="Checking if we should shutdown" controller=localBuild controllerGroup=idpbuilder.cne.io.controller
...
time=2024-03-17T01:50:59.012Z level=INFO msg="Installing bootstrap apps to ArgoCD" controller=localBuild controllerGroup=idpbuilder.cne.io.controller
...
time=2024-03-17T01:50:59.032Z level=INFO msg="Expected annotation, cne.io/last-observed-cl-start-time, not found" controller=localBuild controllerGroup=idpbuilder.cne.io.controller
...
time=2024-03-17T01:50:59.034Z level=INFO msg="Checking if we should shutdown" controller=localBuild controllerGroup=idpbuilder.cne.io.controller
...
time=2024-03-17T01:51:30.000Z level=INFO msg="Unknown field 'statusHistory[0].initialDeploy" logger=kubeDeploymentLogger
...
time=2024-03-17T01:51:30.032Z level=INFO msg="Installing bootstrap apps to ArgoCD" controller=localBuild controllerGroup=idpbuilder.cne.io.controller
...
time=2024-03-17T01:51:30.073Z level=INFO msg="Checking if we should shutdown" controller=localBuild controllerGroup=idpbuilder.cne.io.controller
...
time=2024-03-17T01:51:30.073Z level=INFO msg="Shutting down" controller=localBuild controllerGroup=idpbuilder.cne.io.controller
...
time=2024-03-17T01:51:30.073Z level=INFO msg="Stopping and waiting for non-leader election roundRobin"
...
time=2024-03-17T01:51:30.073Z level=INFO msg="Shutdown signal received, waiting for all workers to finish" controller=idpCustomizeLogs controller
...
time=2024-03-17T01:51:30.073Z level=INFO msg="Shutdown signal received, waiting for all workers to finish" controller=idpRepository controller
...
time=2024-03-17T01:51:30.073Z level=INFO msg="Shutdown signal received, waiting for all workers to finish" controller=idpLocalBuild controller
...
time=2024-03-17T01:51:30.073Z level=INFO msg="All workers finished" controller=idpLocalBuild controllerGroup=idpbuilder.cne.io.controller
...
time=2024-03-17T01:51:30.073Z level=INFO msg="All workers finished" controller=idpCustomizeLogs controllerGroup=idpbuilder.cne.io.controller
...
time=2024-03-17T01:51:30.073Z level=INFO msg="Stopping and waiting for webhooks"
...
time=2024-03-17T01:51:30.074Z level=INFO msg="Stopping and waiting for HTTP servers"
...
time=2024-03-17T01:51:30.074Z level=INFO msg="Wait completed, proceeding to shutdown the manager"
```

At the bottom left, a Jenkins status bar indicates "Can Access ArgoCD at https://argocd.cne.localtest.me:8443/". The status bar also shows the user "admin", the password "password", and the version "Jenkins 2.362.1".

Platform best practices / guidance

A photograph of a man and a woman standing in front of a dark chalkboard. The man, on the left, has a beard and is wearing a blue and white plaid shirt, gesturing with his hands as if speaking. The woman, on the right, has long brown hair and is wearing a yellow cable-knit sweater, also gesturing with her hands. Between them is a large, empty speech bubble drawn with white chalk on the chalkboard.

Build with your customers



Documentation and education are key

A wide-angle photograph of a volcanic eruption at sunset. In the foreground, dark silhouettes of volcanic rock and a rocky shoreline are visible. A massive, billowing plume of dark smoke and ash rises from the ocean, illuminated from behind by the setting sun. To the right, a bright orange glow from the lava flow illuminates the clouds and the sky. The ocean surface is visible in the lower left.

Don't boil the ocean



Provide escape hatches



One size doesn't fit all workloads

Thank You!

Survey



Carlos Santana

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<https://forms.gle/yvNCmf4SCR4HE9xV9>