// CODE ➡ CLUSTER:
BOOSTING DEVELOPMENT WITH A LOCAL KUBERNETES OPS PLATFORM

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Slides

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🙋 **What is your profession?**

🤓 Software Engineer / Developer

🙋 # What is your profession?

🛠️ Platform Engineer / Ops person

🙋 **Who uses Kubernetes for local development?**

k3d Minkube Microk8s k3s

KIND Docker Desktop k0s

Rancher Desktop

Kelsey Hightower ✓
@kelseyhightower

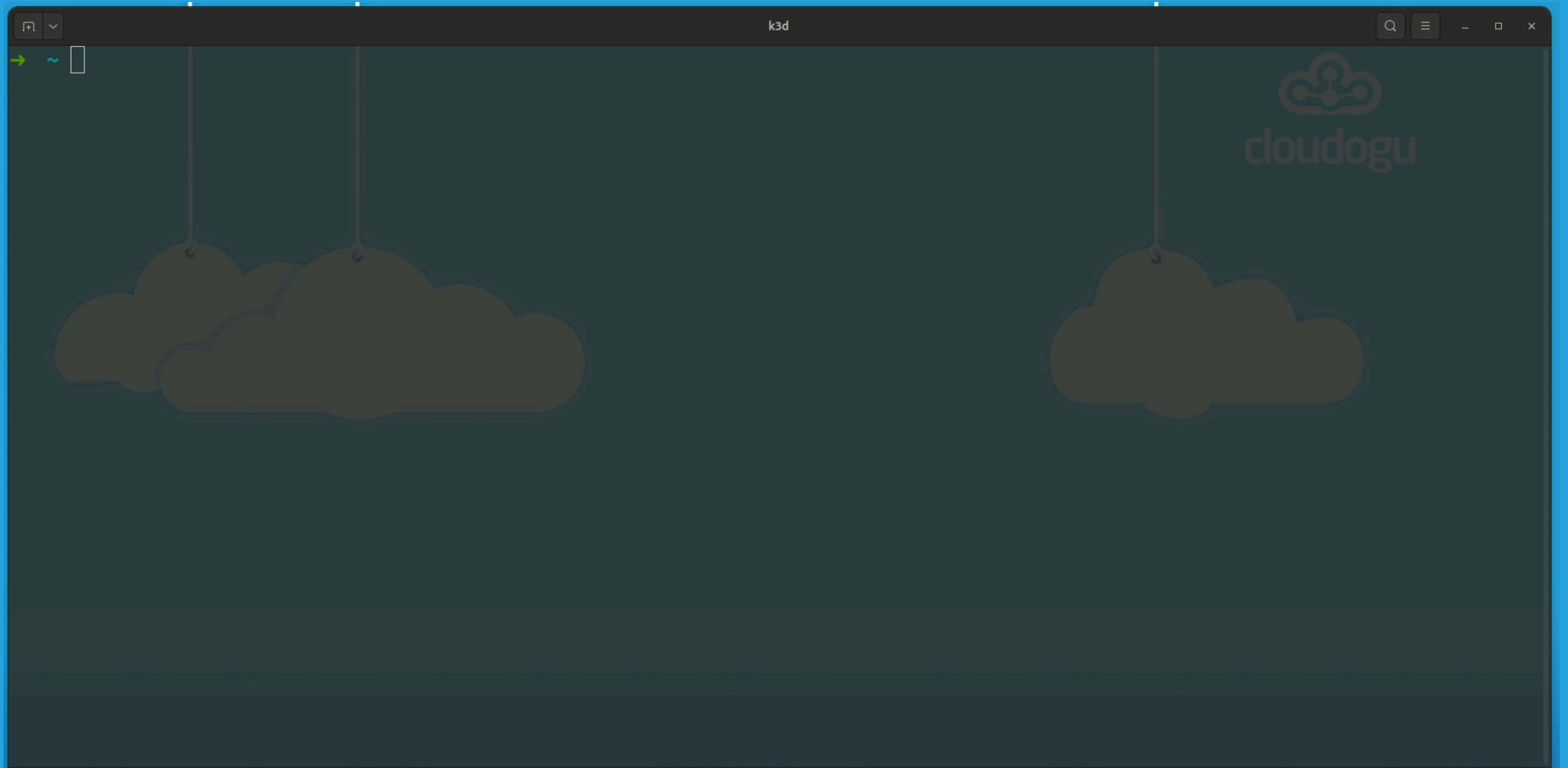Kubernetes is a platform for building platforms. It's a better place to start; not the endgame.
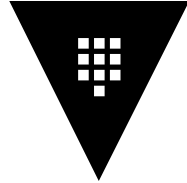
10:04 PM · Nov 27, 2017

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Start a local k8s cluster with one command

Next, start the platform
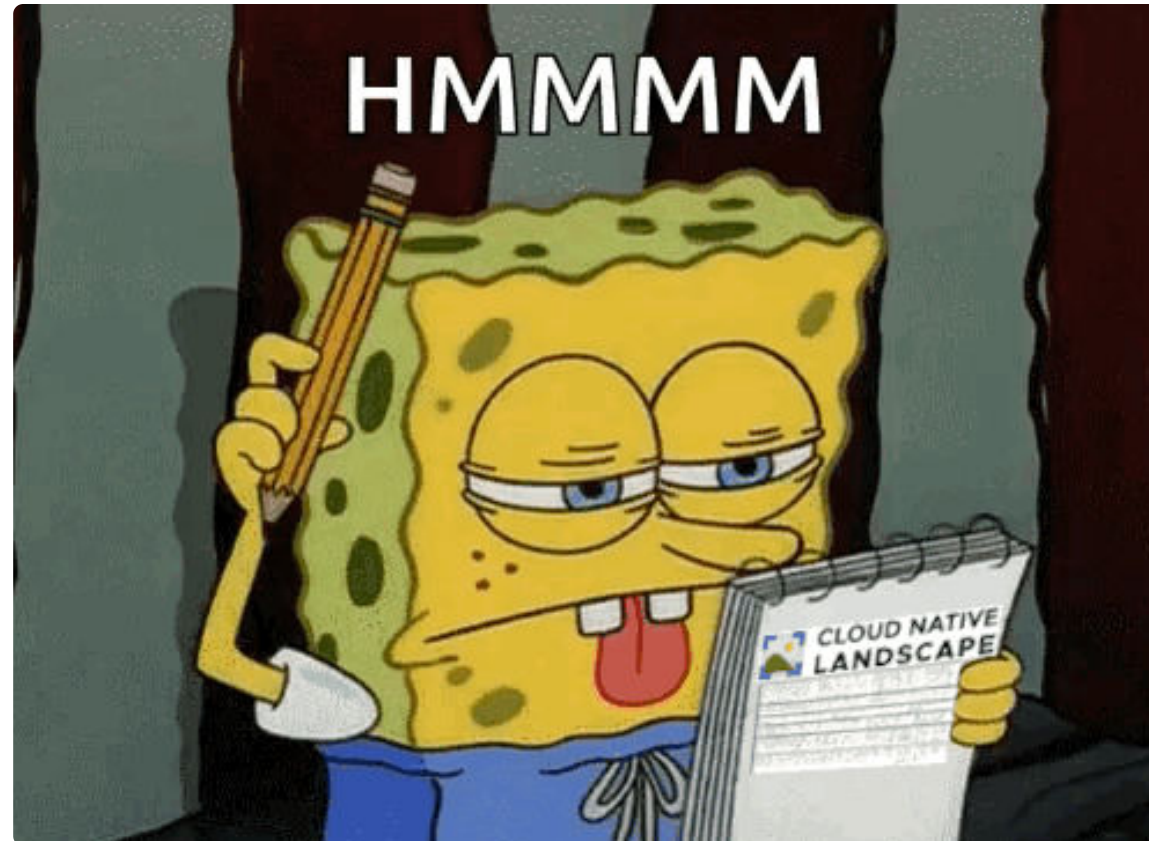
So, let's write a *little* script...

Code Blame Raw

```
669          --metrics | --monitoring ) shift;; # Ignore, used in groovy only
670          --mailhog-url             ) shift 2;; # Ignore, used in groovy only
671          --vault                   ) shift 2;; # Ignore, used in groovy only
672          --petclinic-base-domain ) shift 2;; # Ignore, used in groovy
673          --nginx-base-domain    ) shift 2;; # Ignore, used in groovy on
674          --destroy                 ) DESTROY=true; shift;;
675          --config-file             ) shift;; # Ignore, used in groovy only
676          --config-map              ) shift;; # Ignore, used in groovy only
677          --output-config-file ) OUTPUT_CONFIG_FILE=true; shift;;
678          --                        ) shift; break ;;
679        *) break ;;
680      esac
681    done
682  }
683
684  main "$@"
```

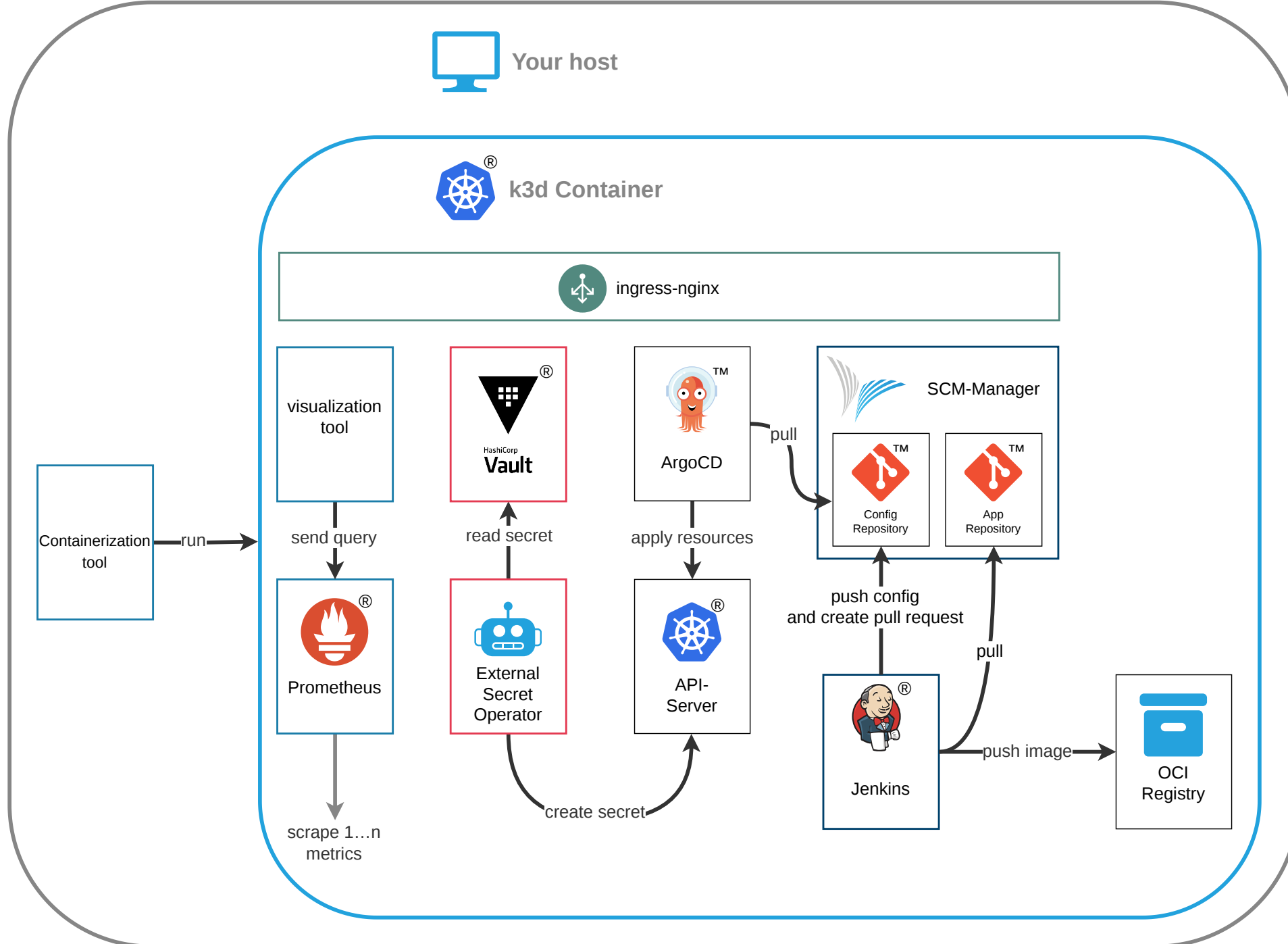# Why not start the platform with one command?

Meet GOP

a GitOps-based operational stack / platform


```
COMMIT='42e5f80'
bash <(curl -s \
  "https://raw.githubusercontent.com/cloudogu/gitops-playground/$COMMIT/scripts/init-cluster.sh") \
  --bind-ingress-port=80 \
  && docker run --rm -t -u $(id -u) \
    -v ~/.config/k3d/kubeconfig-gitops-playground.yaml:/home/.kube/config \
    --net=host \
    ghcr.io/cloudogu/gitops-playground:$COMMIT --yes --base-url=http://localhost --ingress-nginx \
      --argocd --monitoring --vault=dev --mailhog
```

cloudogu/gitops-playground

Your host

k3d Container

ingress-nginx

visualization tool

Vault
HashiCorp

ArgoCD

SCM-Manager

Config Repository

App Repository

Containerization tool

run

send query

read secret

apply resources

pull

Prometheus

External Secret Operator

API-Server

push config and create pull request

pull

scrape 1…n metrics

create secret

Jenkins

push image

OCI Registry

GitOps playground

©Cloudogu GmbH 2024: GitOps Playground© for use with Argo™, Git™, Jenkins®, Kubernetes®, Prometheus®, Vault® and SCM-Manager

scripts/init-cluster.sh

```
k3d cluster create gitops-playground \
  # Mount port for ingress
  -p 80:80@server:0:direct \
  # Pin image for reproducibility
  --image=rancher/k3s:v1.29.1-k3s2 \
  # Disable built-in ingress controller, because we want to use the same one locally and in prod
  --k3s-arg=--disable=traefik@server:0 \
  # Allow node ports < 30000
  --k3s-arg=--kube-apiserver-arg=service-node-port-range=8010-65535@server:0 \
  # Hacks to make Docker available in Jenkins
  -v /var/run/docker.sock:/var/run/docker.sock@server:0 \
  -v /etc/group:/etc/group@server:0 -v /tmp:/tmp@server:0 \
  -p 30000:30000@server:0:direct

# Write kubeconfig to ~/.config/k3d/kubeconfig-gitops-playground.yaml
k3d kubeconfig write gitops-playground
```

docker run

```
docker run
  # Remove container after running, keeping your device clean
  # (remove in case of error to preserve logs)
  --rm
  # Colorful output, please
  -t
  # Run as current user, so files written to /tmp are accessible for you
  -u $(id -u) \
  # Mount kubeconfig for k3d
  -v ~/.config/k3d/kubeconfig-gitops-playground.yaml:/home/.kube/config \
  # Make k3d cluster available
  --net=host \
ghcr.io/cloudogu/gitops-playground:$COMMIT #Params for image go here
```

`ghcr.io/cloudogu/gitops-playground`

- OCI image

- Contains logic to install and configure the tools

- App written in Groovy (and bash 😰)

- Additional resources to run e.g. in air-gapped envs

Your turn