


Kubernetes como Plataforma de Desarrollo

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DevOps at Okteto

About Me

Iñaki Respaldiza Hidalgo

-  @irespaldiza
- Docker Sevilla organizer
- Ex Pixelated Heart
- Ex DevOps at BBVA Solution Portfolio
- <https://cloud.okteto.com>



Agenda

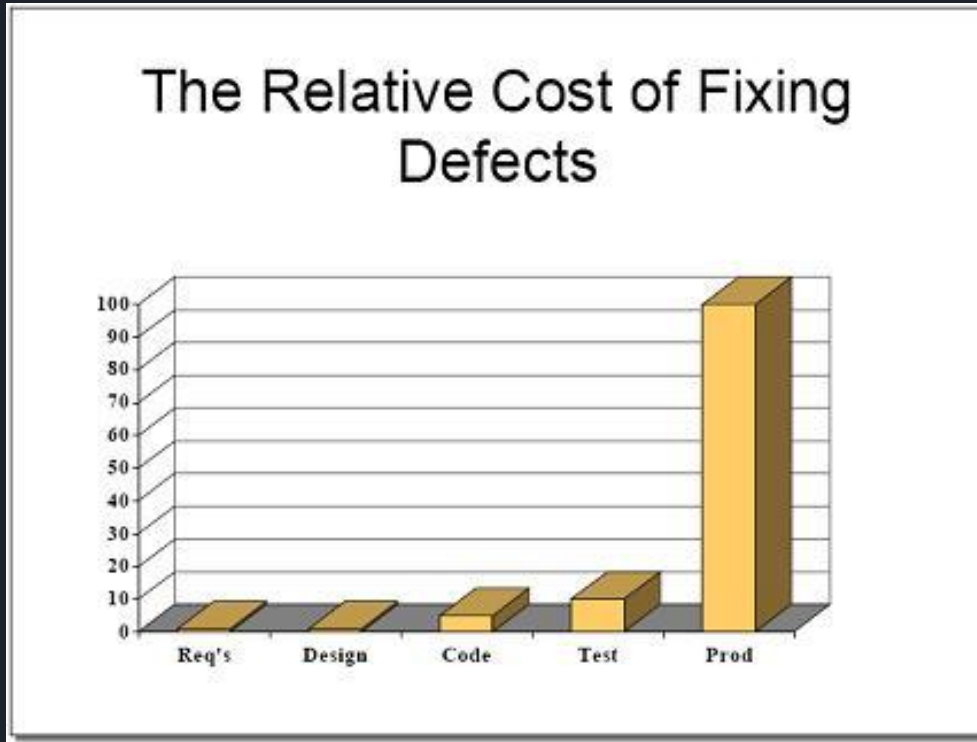
- Developer productivity
- Workflows
- Kubernetes as a development platform
 - Multi-Tenancy
 - Development Experience
- Demo
- Conclusions
- Exercise

Developer Productivity

Developer Productivity

- 24% dealing with development environments
- 16% dealing with integration issues
- 40% of development time is wasted
- Switching contexts decreases productivity

Relative Cost of Fixing Defects



Source: http://www.riceconsulting.com/public_pdf/STBC-WM.pdf

What does Development Environment mean?

- A development environment is a collection of procedures and tools for developing, testing and debugging an application
- Application dependencies:
 - OS
 - OS libraries
 - Programming language libraries
 - Compiler
- External dependencies : MySQL, Redis, Postgres, RabbitMQ
- IDE, debuggers, plugins...

What do I expect?



Replicable



Production-like

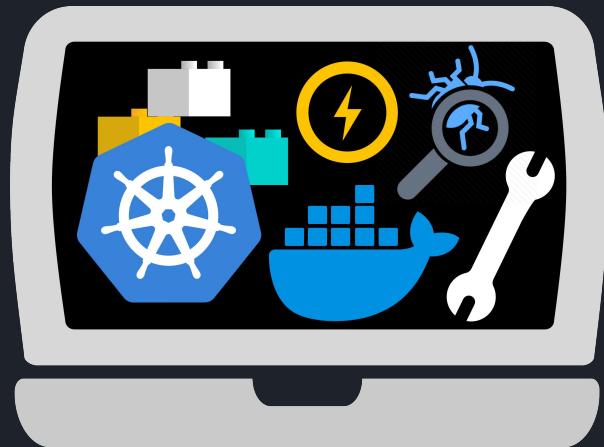


Inner Loop

Development Workflows

Local without containers

- Everything installed in my machine. Too much responsibility in CI.
- UX: fast builds, debuggers, hot reloads...



Local sin Contenedores



Containers

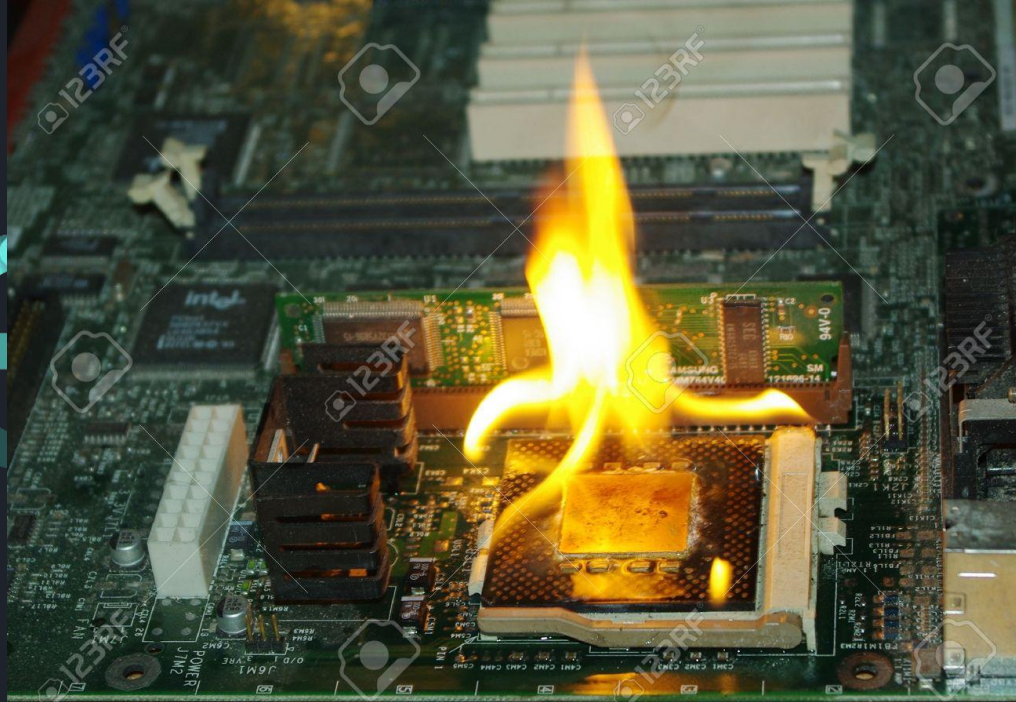
- Same runtime, but Kubernetes != Docker
- Manifest explosion



Contenedores



Containers



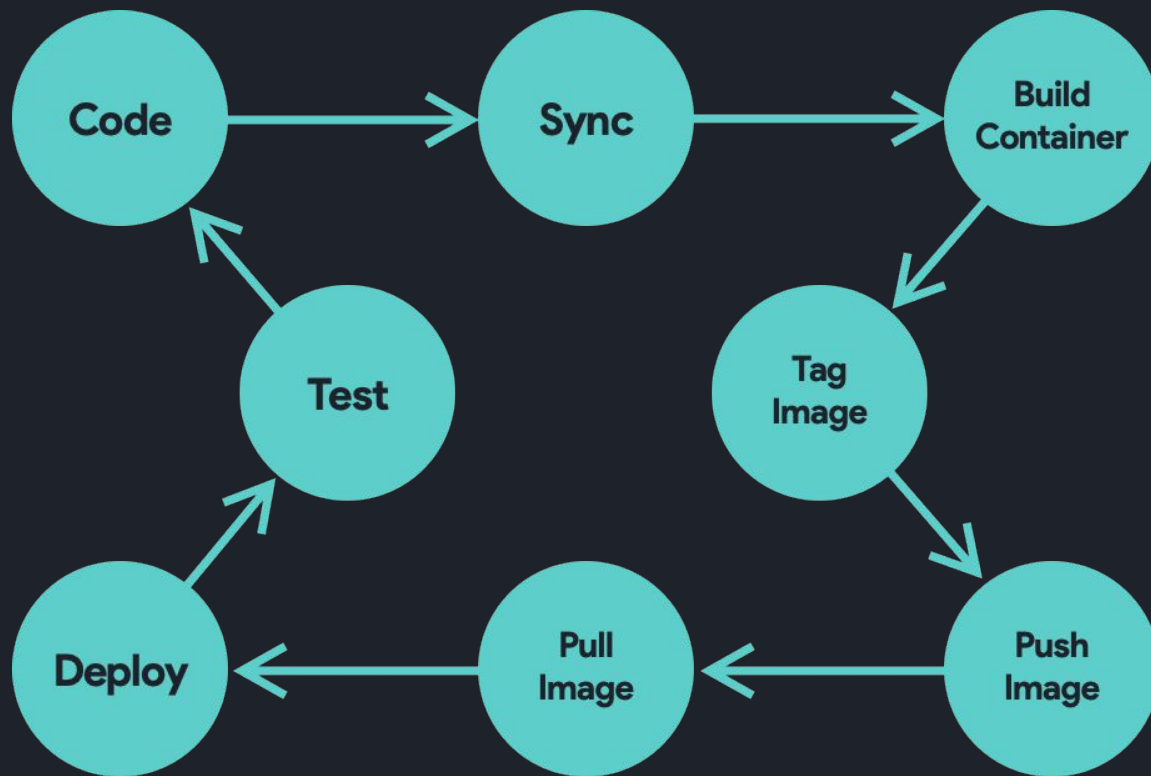
**Mocked systems give you
mocked confidence**

Remote Kubernetes

- Production-like environments
- Fast (and shared) hardware, network
- Collaboration



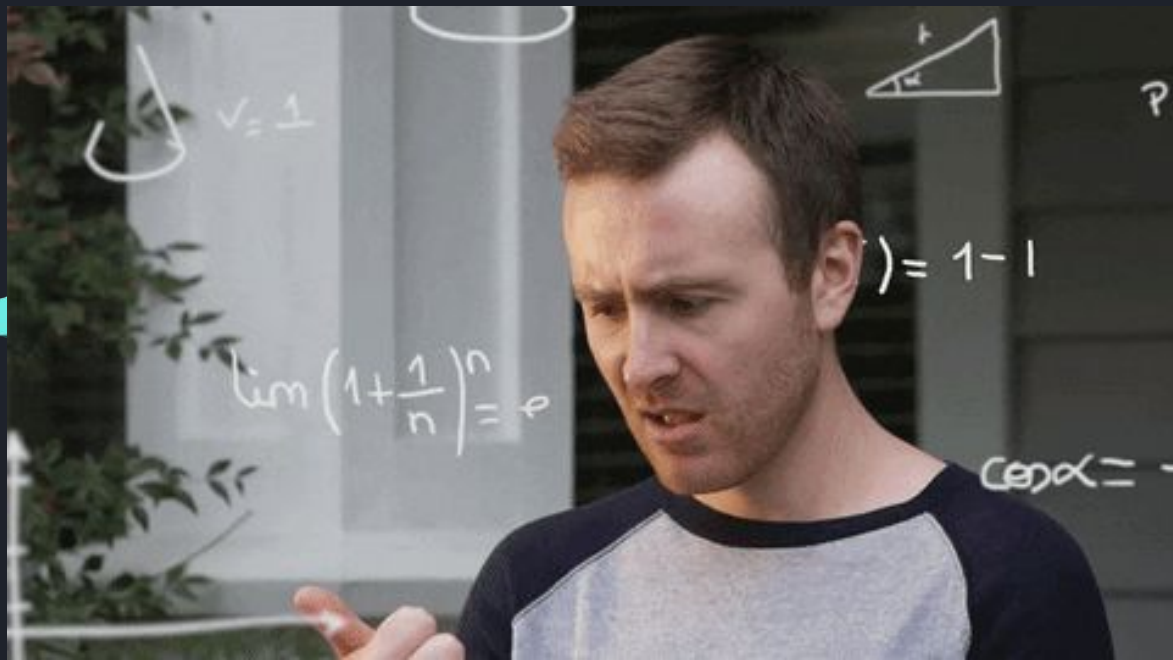
Remote Kubernetes



Kubernetes Remoto



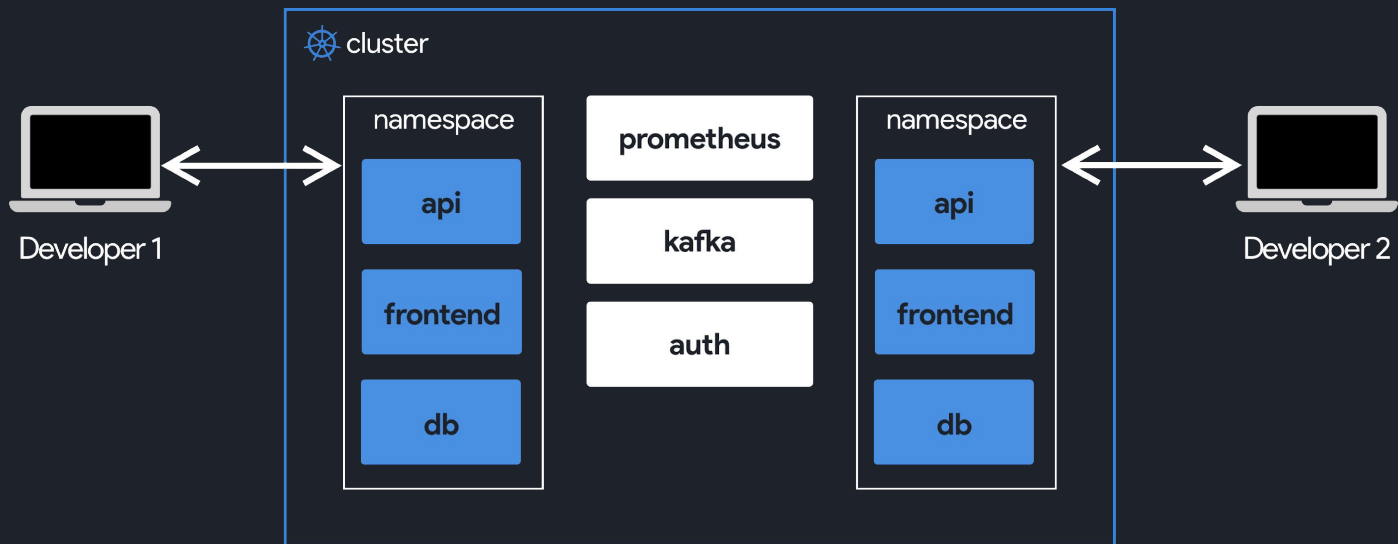
Kubernetes



Multi-Tenancy

Multi-Tenancy

- Each developer works on her own namespace
- Sandboxing using RBAC, network policies, OPA, quotas...
- Access to platform services



Development Experience

Development Experience

- Skaffold
- Telepresence
- Online IDE
- Okteto

github.com/GoogleContainerTools/skaffold

GoogleContainerTools / skaffold

Watch

211

Star

9.9k

Fork

968

<> Code

Issues 235

Pull requests 19

Actions

Security

Insights

Branch: master

Go to file

Clone



nkubala committed ed43aaa 15 hours ago

6,660 commits 14 branches 64 tags



.dependabot

Fix dependabot config (#4297)

22 days ago



.github

update codeowners to org and team.

12 days ago



cmd/skaffold

`skaffold init` supports different exit codes (#4408)

15 hours ago



deploy

Run integration tests on kind 0.8.1 (#4400)

yesterday

About

Easy and Repeatable Kubernetes Development

skaffold.dev/

kubernetes

developer-tools

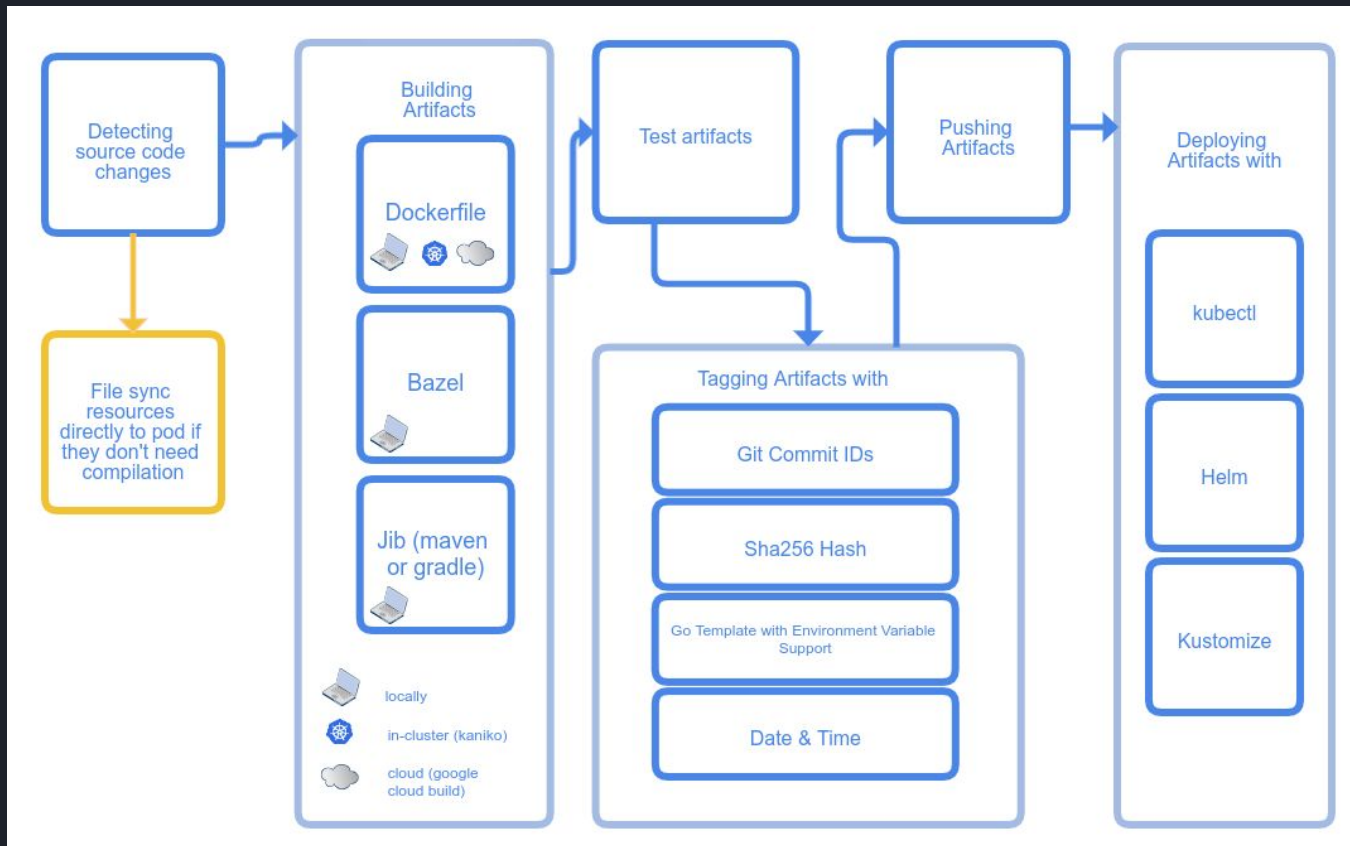
docker

containers

go

Readme


Scaffold













Skaffold Manifest

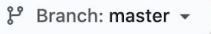
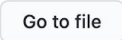

```
apiVersion: skaffold/v1beta14
kind: Config
build:
  artifacts:
    - image: irespaldiza/vote
  local:
    push: true
deploy:
  kubectl:
    manifests:
      - k8s.yaml
```




github.com/telepresenceio/telepresence




 telepresenceio / telepresence





 Watch 55  Star 2.9k  Fork 205

 Code  Issues 421  Pull requests 9  Actions  Projects 1  Security  Insights

 Branch: master ▾  Go to file  Clone ▾


 ark3 committed ed4f9ad on 29 May  

 2,952 commits  5 branches  105 tags

 .circleci	Update Linux image for cluster CI	last month
 .github	Adjust stalebot settings [ci skip]	last month
 .towncrier	Update Towncrier config to point to new repo	2 years ago
 ci	Use packaged torsocks rather than building it	last month

About

Local development against a remote Kubernetes or OpenShift cluster

 www.telepresence.io

kubernetes

local-development

docker

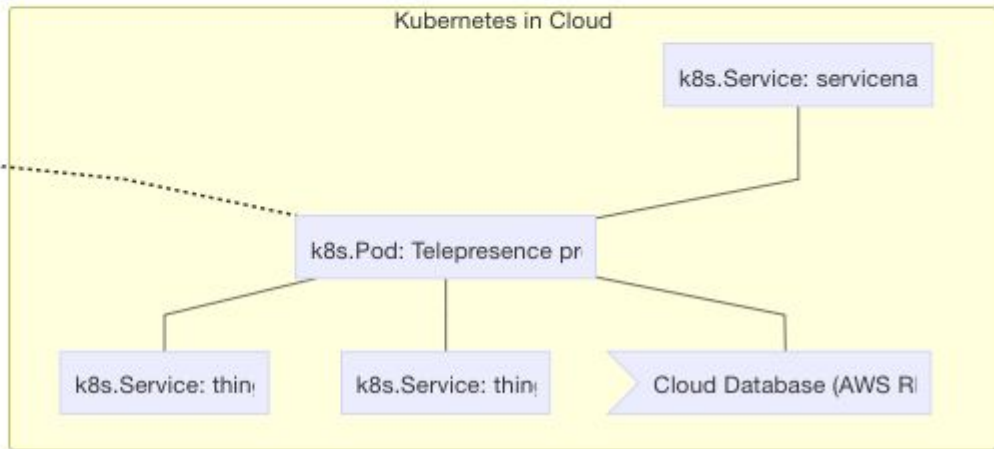
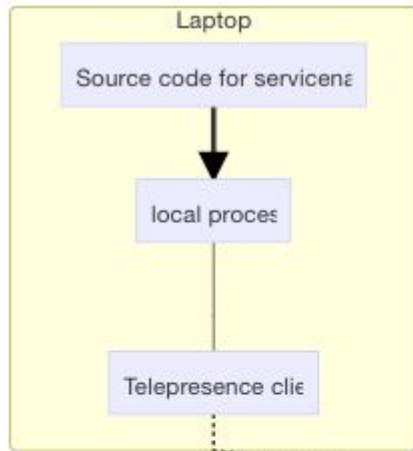
proxy

tunnel

vpn

minikube

Telepresence



github.com/okteto/okteto

okteto / okteto

Watch

30

Star

1.1k

Fork

96

<> Code

Issues 59

Pull requests

Actions

Projects

Security

Insights

Branch: master

Go to file

Clone



pchico83 committed 635106f 2 hours ago

874 commits

10 branches

89 tags

.circleci	store the okteto and synching logs as artifacts in the CI job (#923)	14 days ago
.github	update release job (#220)	13 months ago
.vscode	Add create command to generate default cnd.yml (#101)	2 years ago
cmd	Clean synching database on pod restarts if PV is not enabled (#961)	2 hours ago
docs	Rename "development environment" to "development container" (#91...	17 days ago
images/bin	Clean synching database on pod restarts if PV is not enabled (#961)	2 hours ago
integration	move up to its own package for clarity (#937)	12 days ago

About

Develop your applications directly in your Kubernetes Cluster

[okteto.com](#)

kubernetes

cloud-native-developers

docker

gke

helm

developer-tools

development

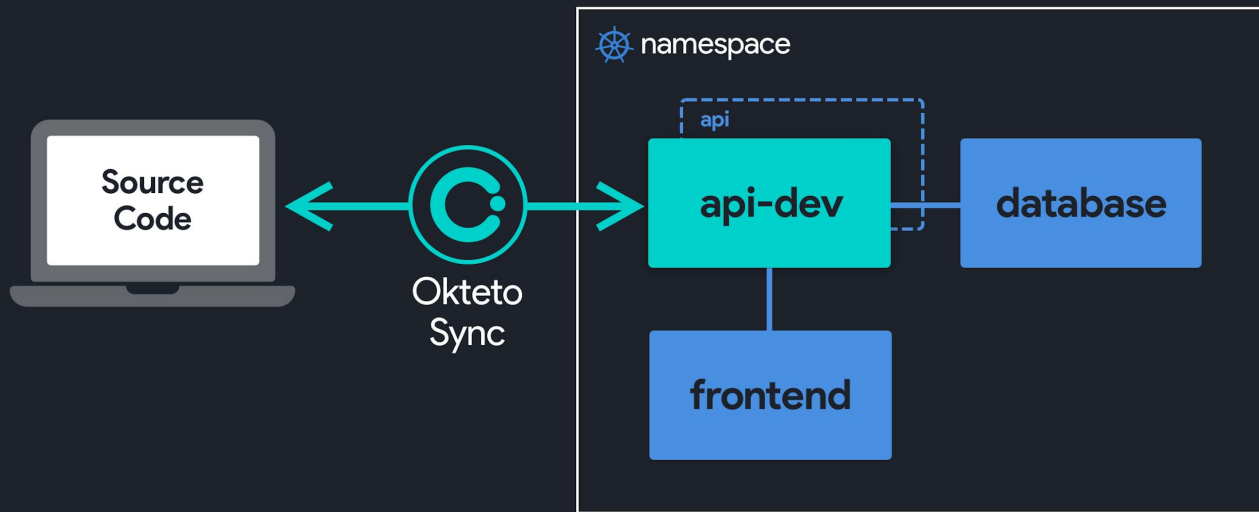
cloud-native

Readme

Apache-2.0 License

Okteto

- Update pod with dev image: compiler, debugger, linters...
- Synchronize local changes to the remote pod



Okteto Manifest

```
name: frontend
image: node:10
workdir: /src
command: ["bash"]
forward:
  - 8080:80
```

Demo time!

Skaffold & Okteto

Materials

Okteto Design Principles

- Client-side only
- Works on Windows, Linux & Mac
- Decouple deployment from development: Helm, kubectl, CI, serverless...
- No need to deal with Docker and Kubernetes in the inner loop
- Local IDE
- Use your own tools

Conclusions



Docker



Kubernetes



Okteto

Conclusions



Conclusions

- Kubernetes has great potential as a development platform
- Each developer is sandboxed at the namespace level
- Fast Inner loop is a must
- Docker and Kubernetes must be optional in the inner loop
- Reduce local setup
- Decouple deployment from development

Muchas Gracias!
