



CI/CD Pipeline mit Gitlab CI und Kubernetes

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- › Software-Defined Datacenters
- › Infrastructure Services
- › High Availability / Scalability / Resilience
- › Cloud technologies

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A full-page background image featuring a person's silhouette standing on a dark rock in the foreground. The person is looking up at a vast night sky filled with stars and the Milky Way galaxy, which appears as a bright, colorful band of light stretching across the upper half of the frame. A dark blue rectangular box is centered over the middle of the image, containing the text "What about you?".

What about you?



Motivation

To Do
List
- Everything!



Scenario: ToDo Webapp

Introduction

- Use Case: Managing Tasks
- HTML/CSS/JS, Golang
- Redis (Master/Slave)

Todo list

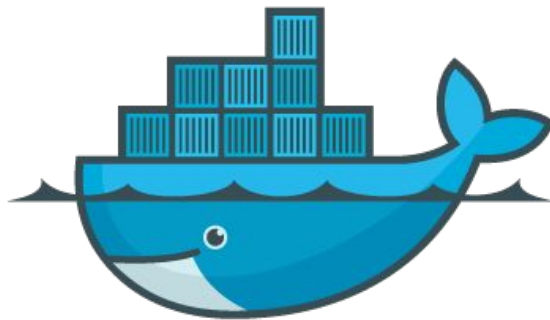


Todo	Delete
TestProd1	<input type="checkbox"/>

Technologies



Gitlab



Docker



Kubernetes

A LEGO minifigure is centered in the frame. It has a yellow head with a simple black smile and two dots for eyes. It wears a red hard hat. Its torso is blue with white details resembling a uniform, including two pockets and three buttons. It has yellow hands and is holding a grey tool or pipe in its left hand. A semi-transparent blue rectangle is overlaid across the middle of the figure, containing the text "How to build your binary?".

How to build your binary?



Container-based Build Slaves

An open notebook with lined pages is placed on a dark wooden surface. A cup of coffee is visible in the upper right corner. A blue rectangular overlay is positioned in the center of the image, containing the text 'Gitlab CI' in white.

Gitlab CI

Pipeline

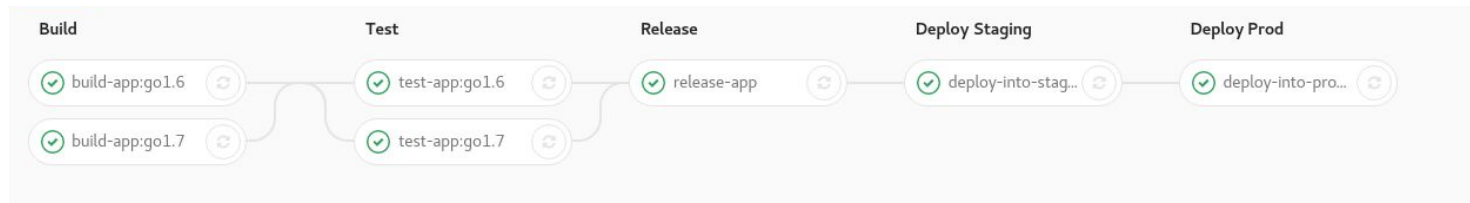


Pipeline

Commit



Tag



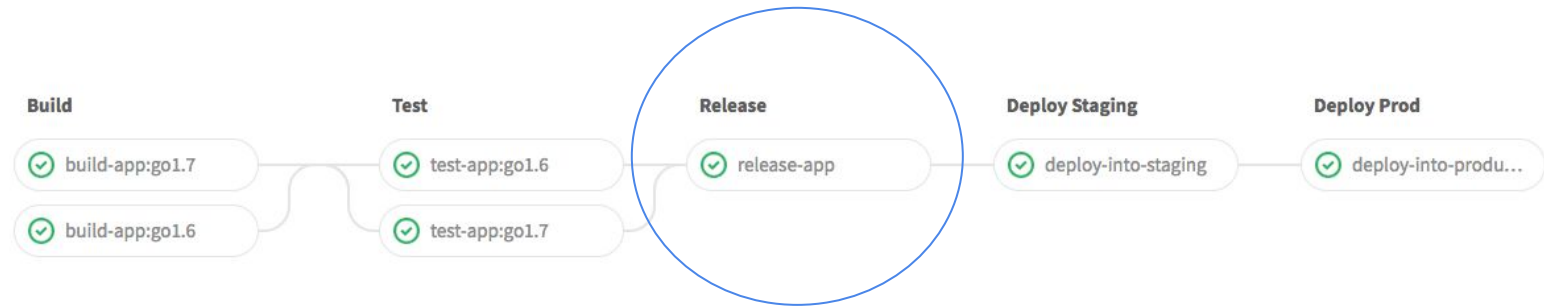
Pipeline



Configuration

```
75 build-app:go1.7:
76   stage: build
77   image: golang:1.7
78   variables:
79     go_version: "1.7"
80   <<: *build_app_yaml_definition
81
20 .build_app_yaml_template: &build_app_yaml_definition # Hidden job that defines
21   tags:
22     - shared
23   artifacts:
24     expire_in: 2 days
25     paths:
26       - bin/*.bin
27   script:
28     - export GOPATH="${HOME}/go"
29     - export GOBIN="${GOPATH?}/bin"
30     - mkdir -p $GOPATH $GOBIN
31     - go env
32     - go get
33     - artifact_version=${CI_BUILD_TAG}
34     - test -z "${artifact_version?}" && artifact_version=${CI_BUILD_REF:0:7}
35     - CGO_ENABLED=0 GOOS=linux GOARCH=amd64 go build -ldflags "-s -w -X main.a
```

Pipeline



Configuration

```
100 release-app:
101   stage: release
102   image: docker:latest #TODO latest?
103   tags:
104     - shared
105   only:
106     - tags
107   dependencies: # Retrieve Artifacts (http://docs.gitlab.com/ce/ci/yaml/README.html#dependencies)
108     - build-app:go1.7
109   variables:
110     go_version: "1.7"
111   script:
112     - ln -s todo-app.go${go_version?}.bin bin/todo-app
113     - docker login -u _json_key -p "${REGISTRY_JSON_KEYFILE?}" https://eu.gcr.io
114     - image_name="eu.gcr.io/${CI_K8S_PROJECT?}/todo-app-web:${CI_BUILD_TAG?}"
115     - docker build -t ${image_name?} .
116     - docker push ${image_name?}
117     - echo "Your new image is '${image_name?}'. Have fun!"
118
```

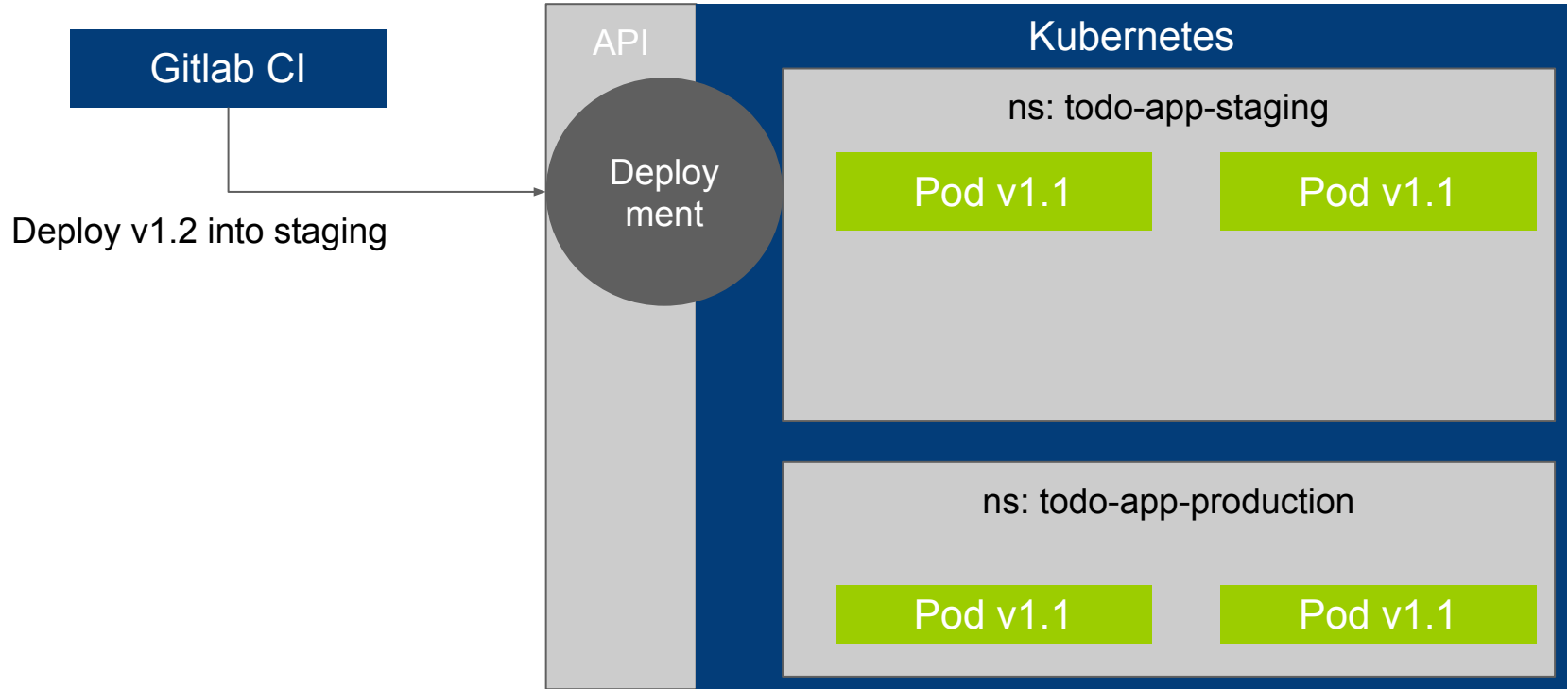
Typical CI/CD Problems

- ★ Build-Software dependencies ✓
- ★ Reproducible builds ✓
- ★ Automated Rollout
- ★ Rollbacks
- ★ Isolated feature testing

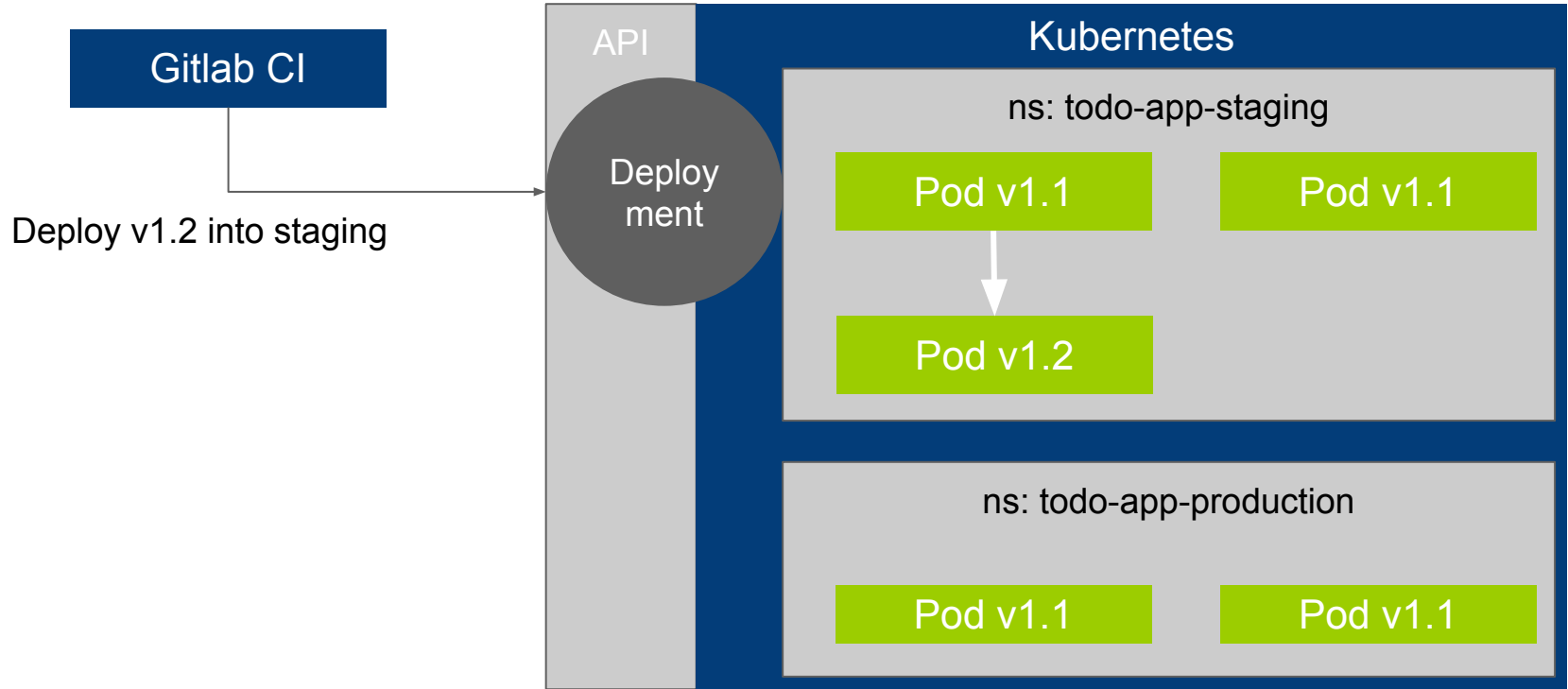
A top-down view of a desk with a vintage map. On the desk are a Minolta camera, a lens, a magnifying glass, a notebook, a pencil, and glasses. A blue semi-transparent banner is overlaid on the map.

Deploy to Kubernetes

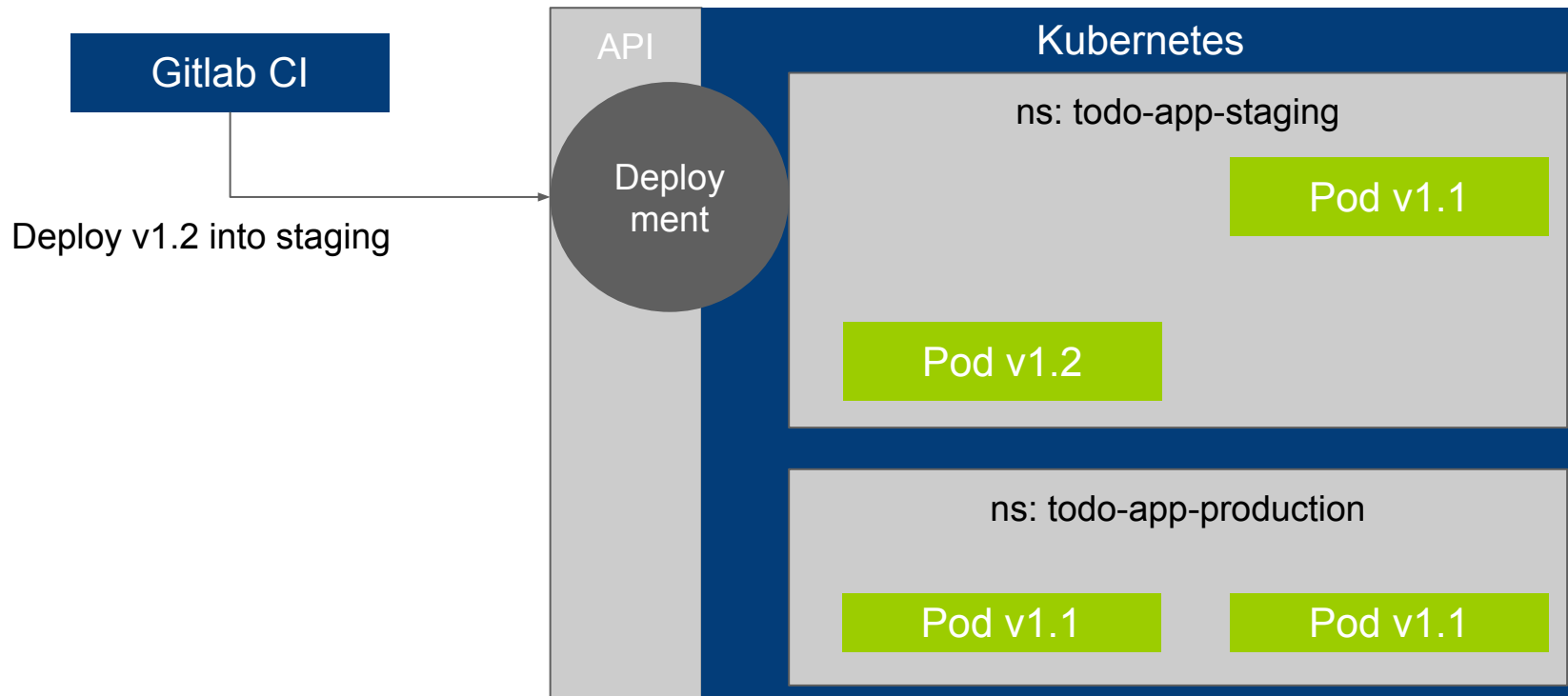
Kubernetes Deployment



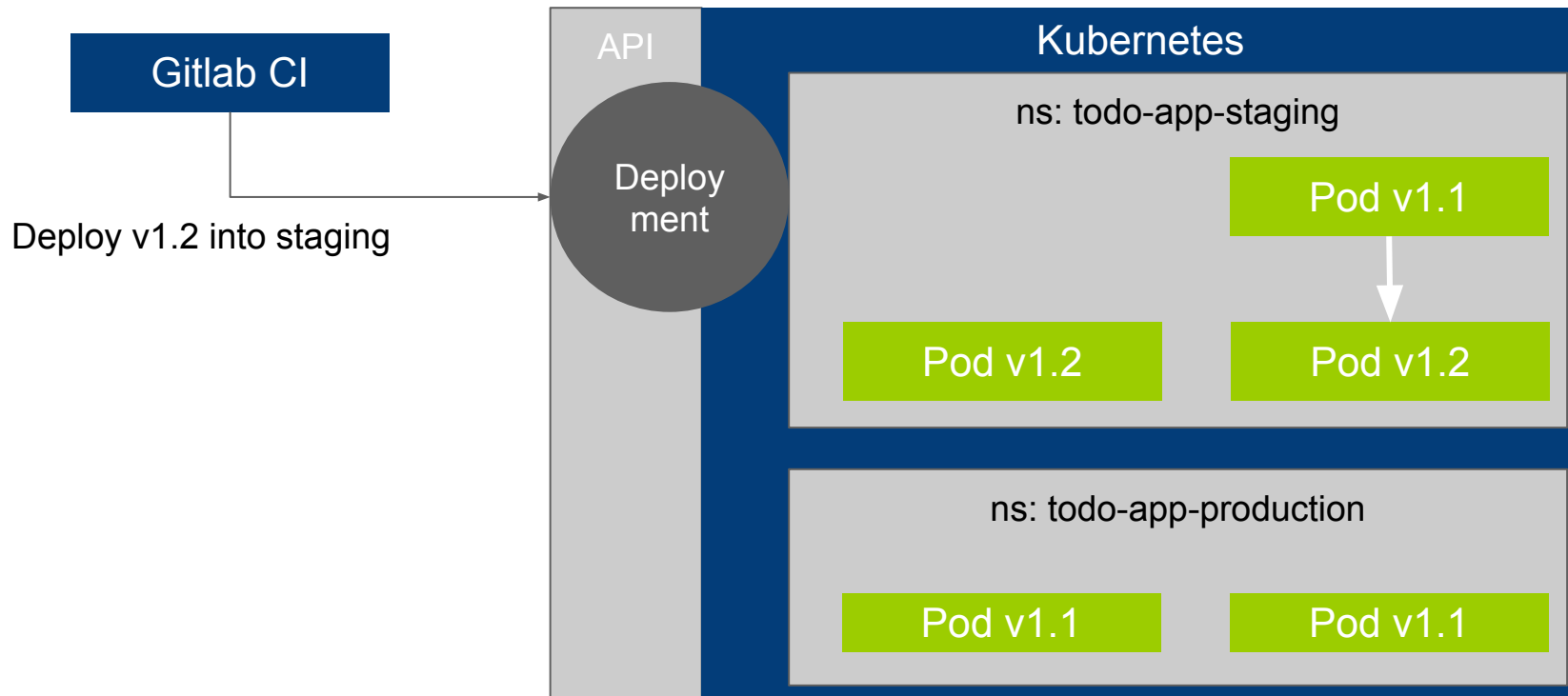
Kubernetes Deployment



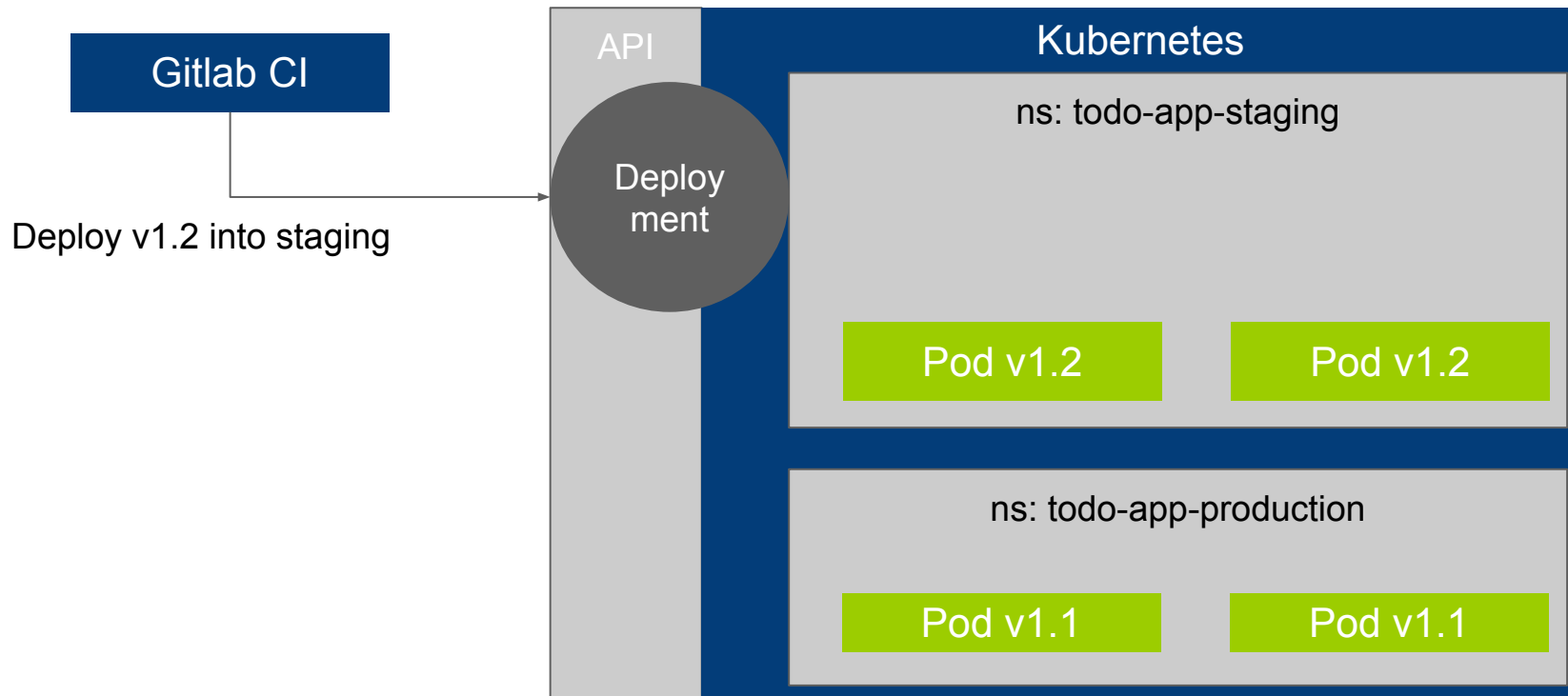
Kubernetes Deployment



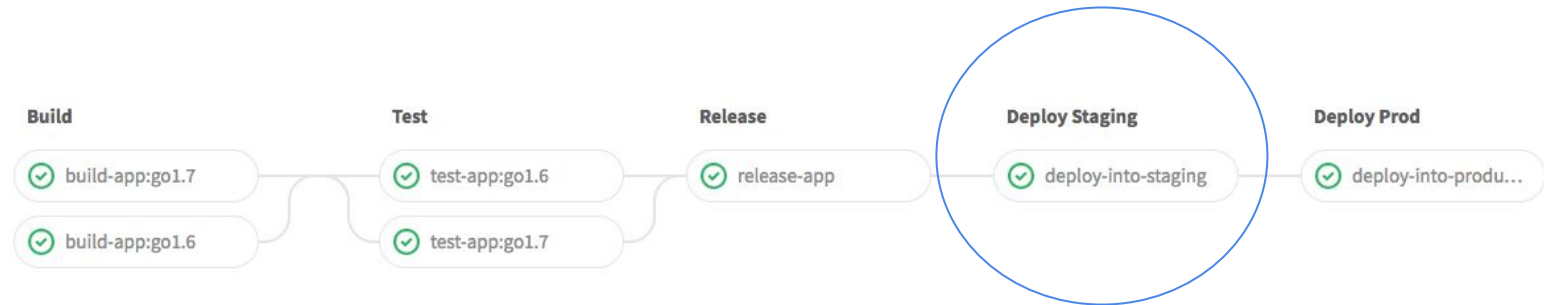
Kubernetes Deployment



Kubernetes Deployment



Pipeline









Configuration

```
119 # DEPLOY
120
121 deploy-into-staging:
122   stage: deploy-staging
123   environment: staging
124   image: docker:latest #TODO latest?
125   tags:
126     - shared
127   only:
128     - tags
129   when: manual
130   variables:
131     k8s_namespace: todo-app-staging
132   <<: *get_kubectl_yaml_template #inserts before_script definition
133   script:
134     - image_name="eu.gcr.io/${CI_K8S_PROJECT?}/todo-app-web:${CI_BUILD_TAG?}"
135     - kubectl config use-context default-context-staging
136     - kubectl --namespace=${k8s_namespace?} set image deployment/todo-app todo-app=${image_name?}
```
















Typical CI/CD Problems

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- ★ Reproducible builds ✓
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- ★ Rollbacks
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Environments

Environment	Last deployment	Job	Commit	Updated	
production	#17 by 	deploy-into-production #5149596	1d8d17e5 Revert "updating html template"	4 months ago	<div> </div> <div>Re-deploy</div>
staging	#15 by 	deploy-into-staging #5149518	fdff04cf make fancy title	4 months ago	<div> </div> <div>Re-deploy</div>















Rollback

production				Edit Stop	
ID	Commit	Job	Created		
#17	 v0.3  1d8d17e5  Revert "updating html templat...	deploy-into-production (#5149596) by 	4 months ago	 ▼	Re-deploy
#16	 v0.5  fdff04cf  make fancy title	deploy-into-production (#5149519) by 	4 months ago	 ▼	Rollback
#14	 v0.3  1d8d17e5  Revert "updating html templat...	deploy-into-production (#5149157) by 	4 months ago	 ▼	Rollback

Typical CI/CD Problems

- ★ Build-Software dependencies ✓
- ★ Reproducible builds ✓
- ★ Automated Rollout ✓
- ★ Rollbacks ✓
- ★ Isolated feature testing

Review Environments

Environment	Last deployment	Job	Commit	Updated	
production	#17 by 	deploy-into-production #5149596	 1d8d17e5 Revert "updating html template"	4 months ago	  <button>Re-deploy</button>
▼ review 2					
review/feature-4711	#22 by 	deploy-into-review #12098976	 3fc1bad9  Update .gitlab-ci.yml	6 minutes ago	<button>Re-deploy</button>
review/feature-1337	#21 by 	deploy-into-review #12098959	 3fc1bad9  Update .gitlab-ci.yml	6 minutes ago	<button>Re-deploy</button>
staging	#15 by 	deploy-into-staging #5149518	 fdff04cf make fancy title	4 months ago	  <button>Re-deploy</button>

Config

```
121
122  deploy-into-review:
123    stage: deploy-review
124    environment: review/${CI_BUILD_REF_NAME}
125    image: docker:latest #TODO latest?
126    tags:
127      - shared
128    only:
129      - branches
130    except:
131      - master
132    script:
133      - echo "deploy ${CI_BUILD_REF_NAME} into environment."
134
```

Typical CI/CD Problems

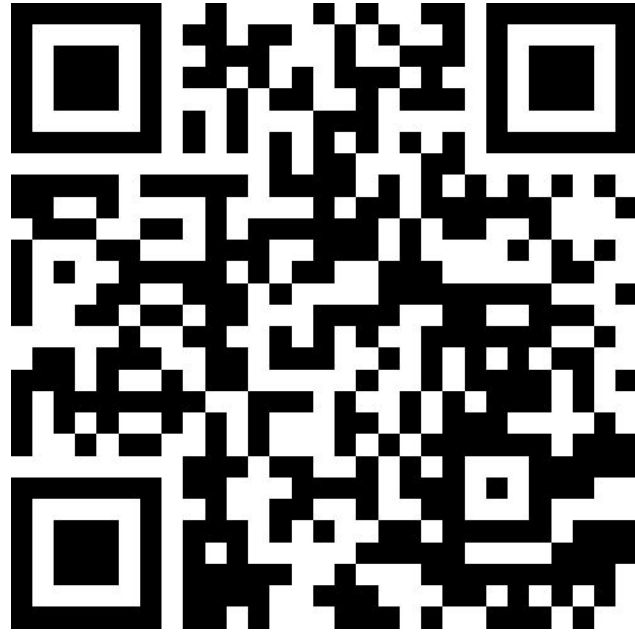
- ★ Build-Software dependencies ✓
- ★ Reproducible builds ✓
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- ★ Rollbacks ✓
- ★ Isolated feature testing ✓

Demo Time: Video!



youtu.be/Ly_f221O6Fo

Assets & Links



gitlab.com/inovex/pa-todo-app-web

A photograph of a modern building facade with a grid of windows, partially obscured by a semi-transparent blue overlay. The overlay contains white and yellow text.

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