GitLab CI/CD 101

GitLab CI/CD 入门指南

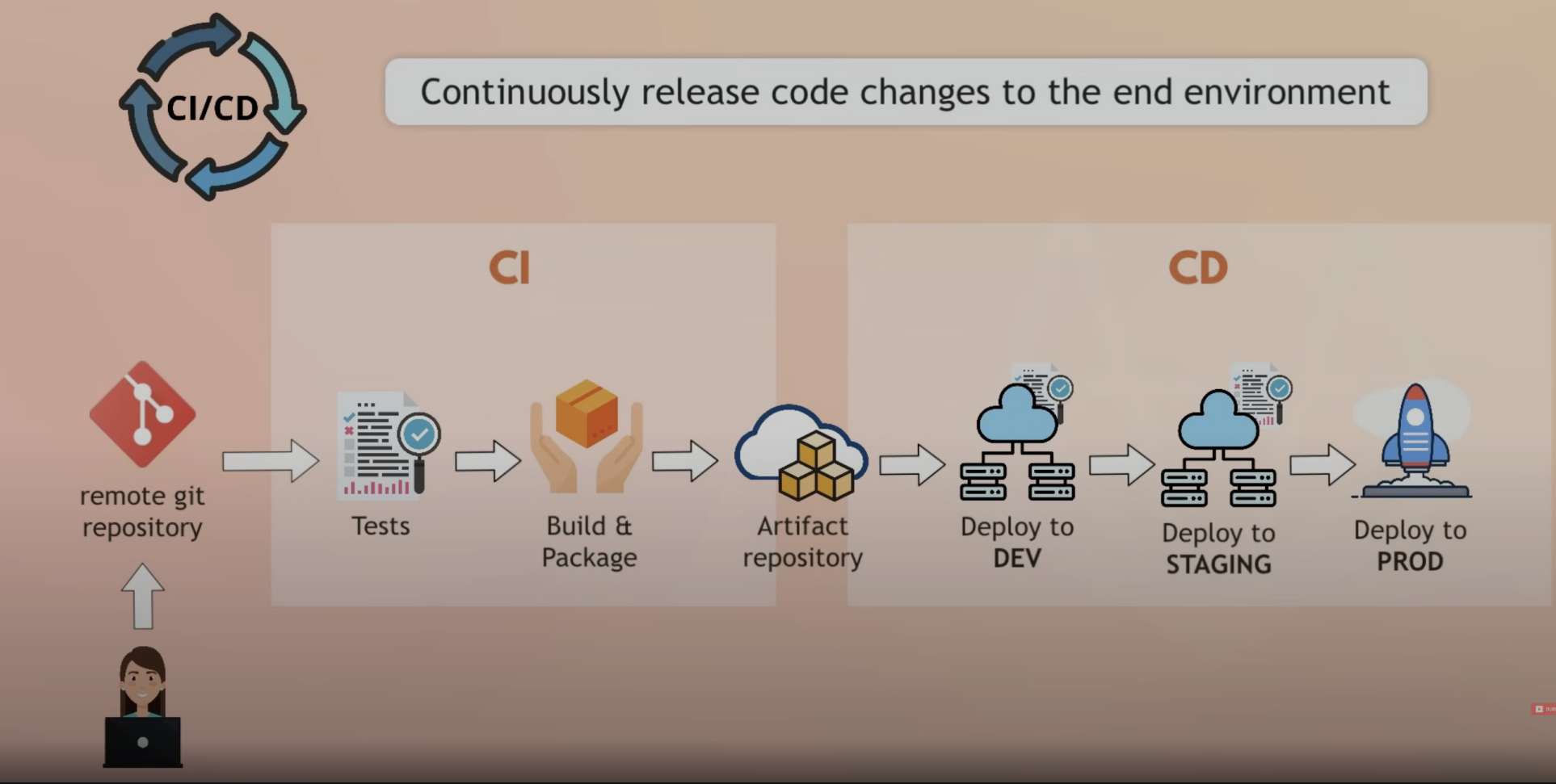
(如无说明，本 Slide 提到的 GitLab 为 13.12.15 版本)

启封 Hayden

GitLab CI/CD 概述

GitLab CI/CD 是什么

- CI: Continuous Integration 持续集成
- CD: Continuous Delivery 持续交付
- CD: Continuous Deployment 持续部署


CI/CD
Continuously release code changes to the end environment
CI
CD
remote git repository
Tests
Build & Package
Artifact repository
Deploy to DEV
Deploy to STAGING
Deploy to PROD

实现 CI/CD 的工具

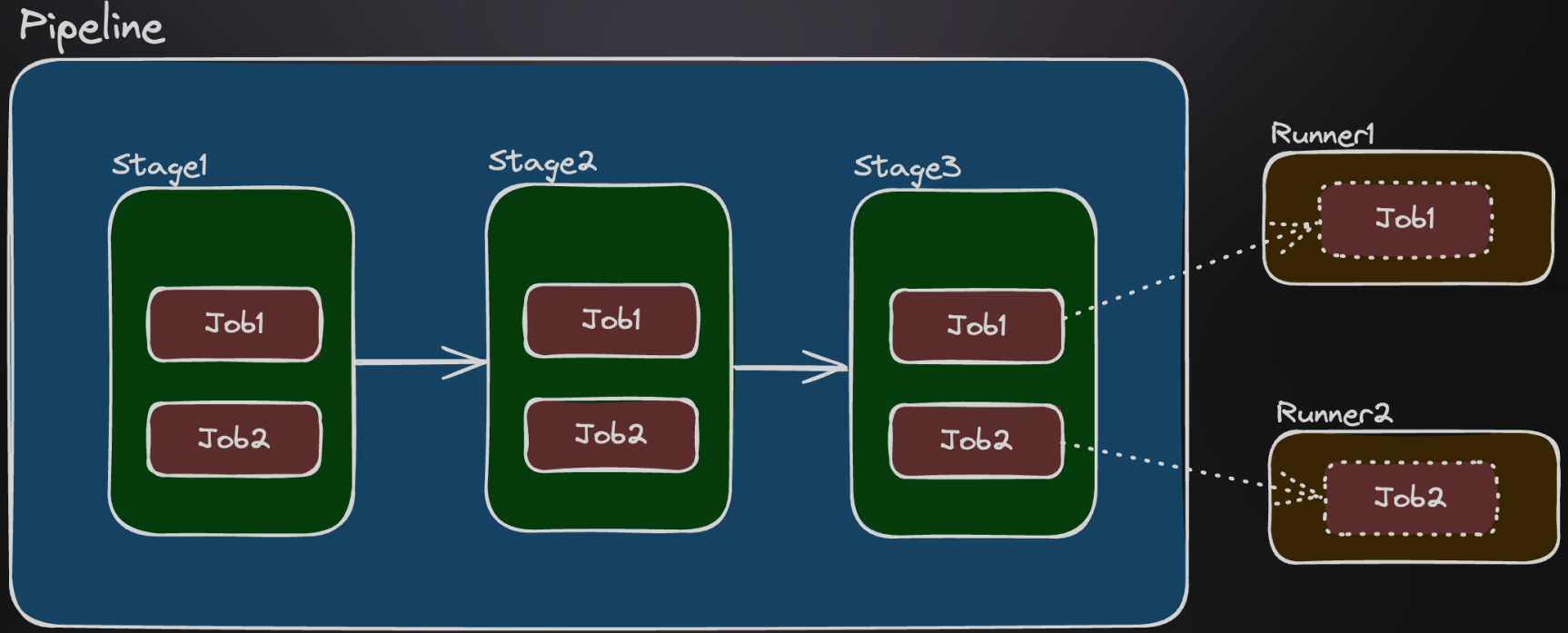
Jenkins

Travis

GitHub Actions

GitLab CI

GitLab CI/CD 基本概念


Pipeline
Stage1
Job1
Job2
Stage2
Job1
Job2
Stage3
Job1
Job2
Runner1
Job1
Runner2
Job2

配置文件 .gitlab-ci.yml

```yaml
stages:
  - test
  - build
  - deploy

job_name:
  stage: test # 所属 stage
  tags: # 用于选择合适的 Runner 执行 Job
    - k8s
  image: harbor-registry.inner.youdao.com/hikari/node-lite:18
  rules: # 规则，用于控制 Job 是否应该创建或执行
    - if: '$CI_COMMIT_TAG =~ /^v\d+\.\d+\.\d+$/' # 线上环境：master 分支打 tag 触发，tag 格式为 v1.0.0
      when: manual # 手动触发
  script: # Job 执行的命令
    - npm run test
```

高级功能

变量 Variables

预定义 CI/CD 变量

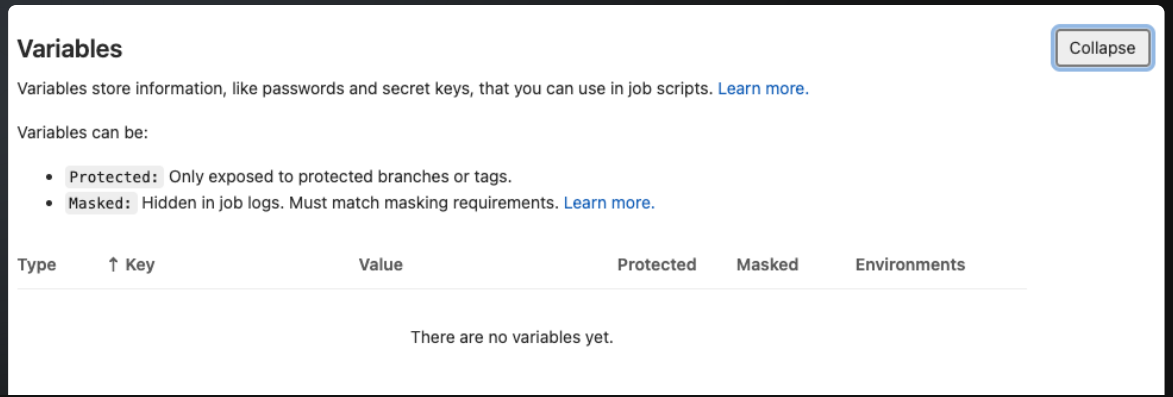
- CI_COMMIT_REF_NAME
- CI_COMMIT_TAG
- CI_SERVER_HOST
- CI_PROJECT_PATH

.gitlab-ci.yml 中定义变量

```yaml
variables: # 全局变量
  RANCHER_CLUSTER_PROD: k8s-prod-common1
  RANCHER_CLUSTER_PRE: k8s-dev-common1

job_name: # job 变量
  variables:
    RANCHER_NAMESPACE: default
    RANCHER_APP_NAME: app-name
```

Web 界面中定义变量



缓存 Cache

在 Jobs 及 Pipeline 之间共享文件，常用于缓存依赖包，提高构建速度。

```yaml
build-app:
  script:
    - pnpm install
    - pnpm build
  cache:
    key:
      files:
        - pnpm-lock.yaml
  paths:
    - .pnpm-store
```

工件 Artifacts

Artifacts 是 Jobs 生成的文件，可以在 Pipeline 的后续 Jobs 中使用。常用于传递构建结果、测试报告等。

```yaml
build-app:
  script:
    - pnpm install
    - pnpm build
  artifacts:
    name: $CI_COMMIT_REF_SLUG
    paths:
      - dist
```

代码复用-include

将公共的 CI 配置放在单独的文件中，然后在 .gitlab-ci.yml 文件中使用 include 指令引入这些公共配置文件。

```yaml
include:
  - project: "hikari/f2e/common-components/common-ci-cd"
    ref: master
    file: "/templates/web-docker.yml"
```

代码复用-extends

`extends` 指令允许一个 job 继承另一个 job 的配置。可以定义一个基础 job，然后让其他 job 继承它。

```
rspec:
  script: rake rspec
  stage: test
```

代码复用-anchor

锚点（anchors）是用来简化和复用配置的一种 YAML 语法特性。它们允许你定义一组配置片段，并在同一个文件中多次引用这些片段。

```yaml
test1:
  image: ruby:2.6
  services:
    - postgres
    - redis
  script:
    - test1 project
```

代码复用-CI/CD Components

GitLab 16 引入

GitLab CI/CD Components 是可重用的 CI/CD 配置片段，可以在不同的项目中共享和重用。

```yaml
# 组件
spec:
  inputs:
    stage:
      default: test
---
unit-test:
  stage: $[[ inputs.stage ]]
  script: echo unit tests
```

```yaml
# 引用组件
include:
  - component: $CI_SERVER_FQDN/myorg/ruby/test@1.0.0
    inputs:
      stage: verify
```

needs

needs 用于指定 job 之间的依赖关系，即一个 job 依赖于另一个 job 的执行结果。他可以改变 job 的执行顺序。

```yaml
job1:
  stage: test
  script:
    - echo "Running job1"

job2:
  stage: test
  script:
    - echo "Running job2"

job3:
  stage: build
  script:
    - echo "Running job3"
  needs:
    - job1
```

dependencies

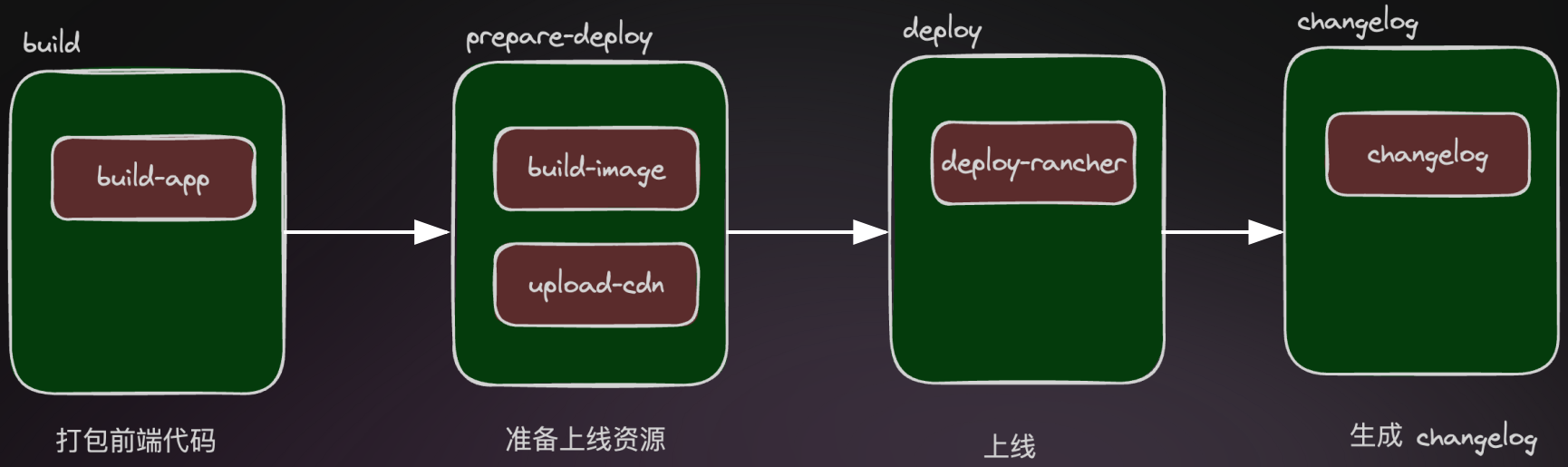
dependencies 用于指定 job 需要下载哪些 job 的 artifacts，其值也必须是之前 stage 里定义的 job。未指定时默认下载之前 stage 的所有 job 的 artifacts。

```yaml
job1:
  stage: test
  script:
    - echo "Running job1"

job2:
  stage: test
  script:
    - echo "Running job2"

job3:
  stage: build
  script:
    - echo "Running job3"
  dependencies:
    - job1
```

公共 CI 配置


build
build-app
prepare-deploy
build-image
upload-cdn
deploy
deploy-rancher
changelog
changelog
打包前端代码
准备上线资源
上线
生成 changelog

遇到的问题

- DEBUG 变量导致 cache 失效
- cache 无法使用 job 变量
- before_script 覆盖

如何使用

https://docs.popo.netease.com/lingxi/a89c80332d954928bfd4a891ec8e5f92

参考资料

- GitLab CI CD Tutorial for Beginners
- Get started with GitLab CI/CD
- 使用公共 CI 部署网页

谢谢！

Slides on slides.haydenhayden.com