

# **BUILD AND RELEASE CONFIDENTLY WITH CONTINUOUS INTEGRATION AND DELIVERY**

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[stevegrunwell.com/slides/intro-to-ci-cd](https://stevegrunwell.com/slides/intro-to-ci-cd)

# WHAT IS CI/CD?

# CONTINUOUS INTEGRATION

- Run a series of scripts automatically, any time changes are pushed
- **Continuously integrate** our changes

# CONTINUOUS INTEGRATION

- Automated tests
- Coding standards
- Static code analysis
- ...etc.





# DEPENDENCIES & ARTIFACTS

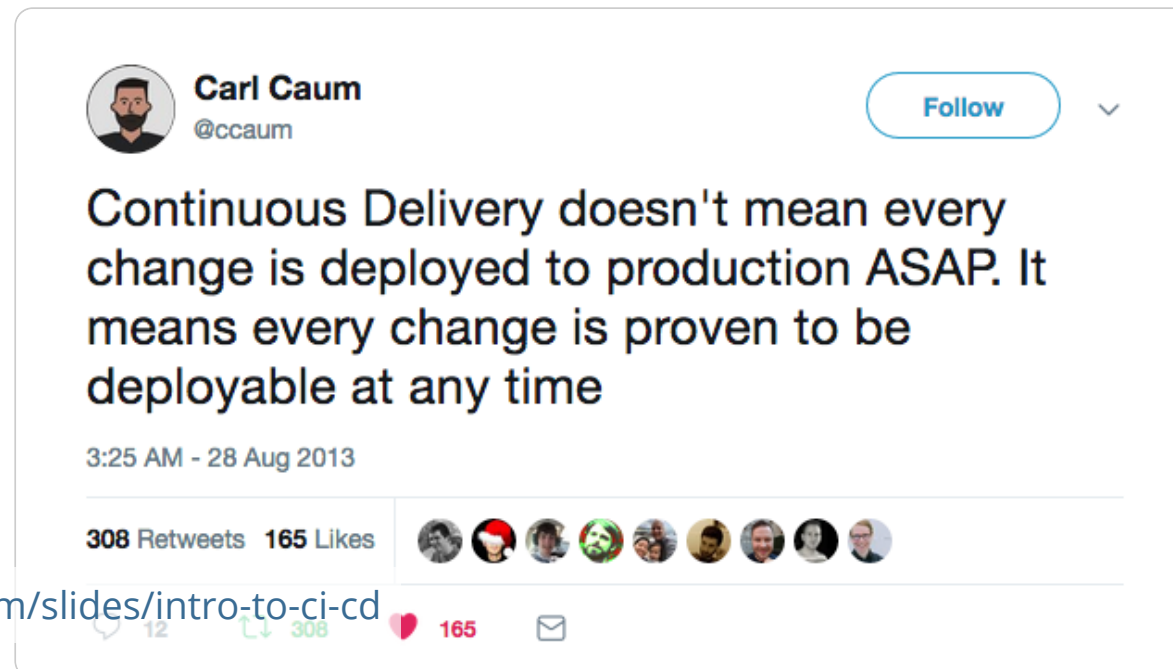
- Dependency management
- Anything that's generated for your app
  - Compiled and/or minified files
  - Binaries
- Source control should only worry about the source

# CONTINUOUS DELIVERY

- Being able to be deploy on-demand
- One-click deployments



# DELIVERY vs. DEPLOYMENT





# **DELIVERY vs. DEPLOYMENT**

## **Delivery**

Some manual step to deploy

## **Deployment**

Always Be Deployin'

Should I deploy on a  
Friday at 5pm?

|  
**NO**

|  
What if I need to jus...

# **DEPLOY WITH CONFIDENCE!**

In order to deploy confidently,  
we must have confidence in our tools.

# **SETTING UP A CI/CD PIPELINE**

# WHAT IS A PIPELINE?

- A route from development to production
- Different branches may take different paths

# CI/CD PROVIDERS

- Jenkins
- Travis CI
- Circle CI
- Codeship
- DeployBot



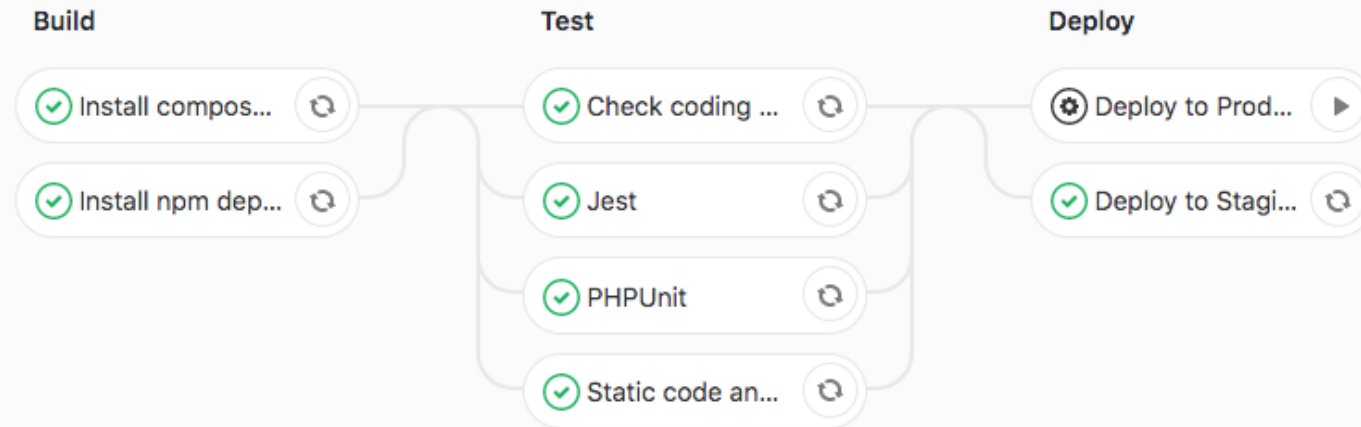


- Source code management tool
- Hosted platform or available for private installation
- Includes CI/CD tools!

# GITLAB CI/CD TOOLS

- Define multiple **stages** (build, test, deploy, etc.)
- Each stage has one or more **jobs**
- Multiple runners == run jobs in parallel!

# A TYPICAL PIPELINE



# PIPELINE CONFIGURATION

`.gitlab-ci.yml`

# A SIMPLE JOB

Install npm dependencies:

stage: build

script:

- npm install --no-progress
- npm run prod

artifacts:

paths:

- public

cache:

key: \${CI\_COMMIT\_REF\_SLUG}-npm

paths:

- node\_modules

**...AND SO MUCH MORE!**

- image
- only + except
- dependencies

[docs.gitlab.com/ee/ci/yaml](https://docs.gitlab.com/ee/ci/yaml)



# ENVIRONMENT VARIABLES

Type	Key	Value	State	Masked	Scope
Variable ▾	PRODUCTION_S	*****	Protected <input type="checkbox"/>	Masked <input type="checkbox"/>	—
Variable ▾	PRODUCTION_T	*****	Protected <input type="checkbox"/>	Masked <input type="checkbox"/>	—
Variable ▾	SSH_PRIVATE_K	*****	Protected <input checked="" type="checkbox"/>	Masked <input type="checkbox"/>	—
Variable ▾	STAGING_SERVE	*****	Protected <input type="checkbox"/>	Masked <input type="checkbox"/>	—
Variable ▾	STAGING_TARGE	*****	Protected <input type="checkbox"/>	Masked <input type="checkbox"/>	—
Variable ▾	TARGET_USER	*****	Protected <input type="checkbox"/>	Masked <input type="checkbox"/>	—

# **SIMPLE DEPLOYMENTS**

# WHAT DOES OUR DEPLOYMENT PROCESS LOOK LIKE RIGHT NOW?

- (S)FTP?
- SSH + `git pull`?
- Docker?

# **A DROP-DEAD SIMPLE DEPLOYMENT:**

1. Build the app
2. scp a tarball to production
3. rsync the files into the web root

# A DROP-DEAD SIMPLE DEPLOYMENT:

```
ship_to_production:
  stage: deploy
  script:
    - tar -czf release.tgz dist/*
    - scp release.tgz "${SSH_USER}@${PRODUCTION_ADDR}:/tmp"
    - ssh "${SSH_USER}@${PRODUCTION_ADDR}" "cd /tmp \
      && tar -xzf release.tgz \
      && rsync release/ /var/www/html/ \
      "
```

# ATOMIC DEPLOYMENTS

**releases/**

Contains multiple, timestamped deployments

**shared/**

Data that should persist between deployments

**current**



# ATOMIC DEPLOYMENTS

```
# /var/www
releases/
+ 1563759801/ # Oldest
+ 1563759802/
+ 1563759803/ # Newest
shared/
+ logs/
- config.json
```

```
current => /var/www/releases/1563759802 # Point to the previous
```

# ATOMIC DEPLOYMENTS

```
ship_to_production:
  stage: deploy
  script:
    # 1. Create + scp tarball
    # 2. Extract to /var/www/releases/{TIMESTAMP}

    # 3. Symlink shared assets
    # 4. Update the `current` symlink
    # 5. Reload the web server
    # 6. (Optional) Roll off older releases
```

[stevegrunwell.com/blog/atomic-deployments-from-scratch](http://stevegrunwell.com/blog/atomic-deployments-from-scratch)

# **EXTENDING OUR PIPELINES**

# BLUE-GREEN DEPLOYMENTS

- Run multiple production environments/servers
  - Some active (blue), some idle (green)
- Deploy to green
- Once ready, route traffic to green
  - Blue becomes idle
- In case of issues, re-route to blue

# BLUE-GREEN DEPLOYMENTS



# **BUILDING A DOCKER IMAGE**

- Final product: a Docker image of your app
- Great for Docker-powered production clusters!



# **GENERATE DOCUMENTATION**

Automatically parse + release documentation!

# CODE COVERAGE REPORTS

- Generate code coverage as part of the CI pipeline
- Help identify branches that reduce code coverage

# NOTIFICATIONS

- GitLab CI/CD supports webhooks
- Can be used to post to Slack, send emails, and more!

**REMEMBER: THIS ISN'T MAGIC!**



# THANK YOU!

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