CI with Docker

Using Gitlab CI

Jörg Henning

@joerghenning

What is GitLab?

- Git based code hosting & collaboration platform
- Similar to GitHub, Bitbucket
- Open source, freemium
- Hosted (free) or on premise
- Rails, PostGres, etc.
- Actively maintained
- https://about.gitlab.com/

Gitlab CI

- Integrated with Gitlab
- Similar to Travis, Codeship
- Integrated since 8.0
- Build scripts hosted in repo
- Distributed runners
- Git hooks

```
#gitlab-ci.yml
image: ruby:2.2
services:
  - postgres:9.3
before_script:
  - bundle install
test:
  script:
  - bundle exec rake spec
```

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https://git.int.krds.com/clients/ /builds

· Builds

Search

0

All 293   Running 0   Finished 293

CI Lint

Running builds from this project

Status	Build ID	Commit
✓ passed	#2593	dc826f9f
✓ passed	#2587	dc826f9f
✓ passed	#2585	dc826f9f
✓ passed	#2583	9559d574
✓ passed	#2151	26461079
✓ passed	#2147	26461079
✓ passed	#2057	adee9dde
✓ passed	#2055	ebde403c
✓ passed	#2053	fa69add7
✓ passed	#1959	e668c96f
✓ passed	#1803	52c2e0c6

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https://git.int.krds.com/clients/ /builds/2587

clients / Stage ∨ · Builds

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Build #2587 for commit **dc826f9f** from staging

✓ passed   2 minutes 33 seconds   14 days ago

```
gitlab-ci-multi-runner 0.5.0 (c38415a)
Using Docker executor with image krds/builder:0.4 ...
Running on runner-e980b4a5-project-471-concurrent-0 via 976daccf424f...

Fetching changes...
Removing www/node_modules/
From https://git.int.krds.com/joerg-henning/utes 33
   2646107..dc826f9   staging    -> origin/staging
Checking out dc826f9f as staging...

$ eval $(ssh-agent -s)
Agent pid 19
$ ssh-add <(echo "$SSH_PRIVATE_KEY")
Identity added: /dev/fd/63 (/dev/fd/63)
$ cd www/
$ npm --quiet install
npm WARN package.json my-project@0.0.1 No description
npm WARN package.json my-project@0.0.1 No README data
npm WARN deprecated lodash@0.9.2: Grunt needs your help! See https://github.com/gruntjs/grunt/issues/
3.
npm WARN deprecated graceful-fs@1.2.3: graceful-fs version 3 and before will fail on newer node release
Please update to graceful-fs@^4.0.0 as soon as possible.
npm WARN deprecated lodash@1.0.2: lodash@<3.0.0 is no longer maintained. Upgrade to lodash@^4.0.
npm WARN optional dep failed, continuing fsevents@1.0.11
```
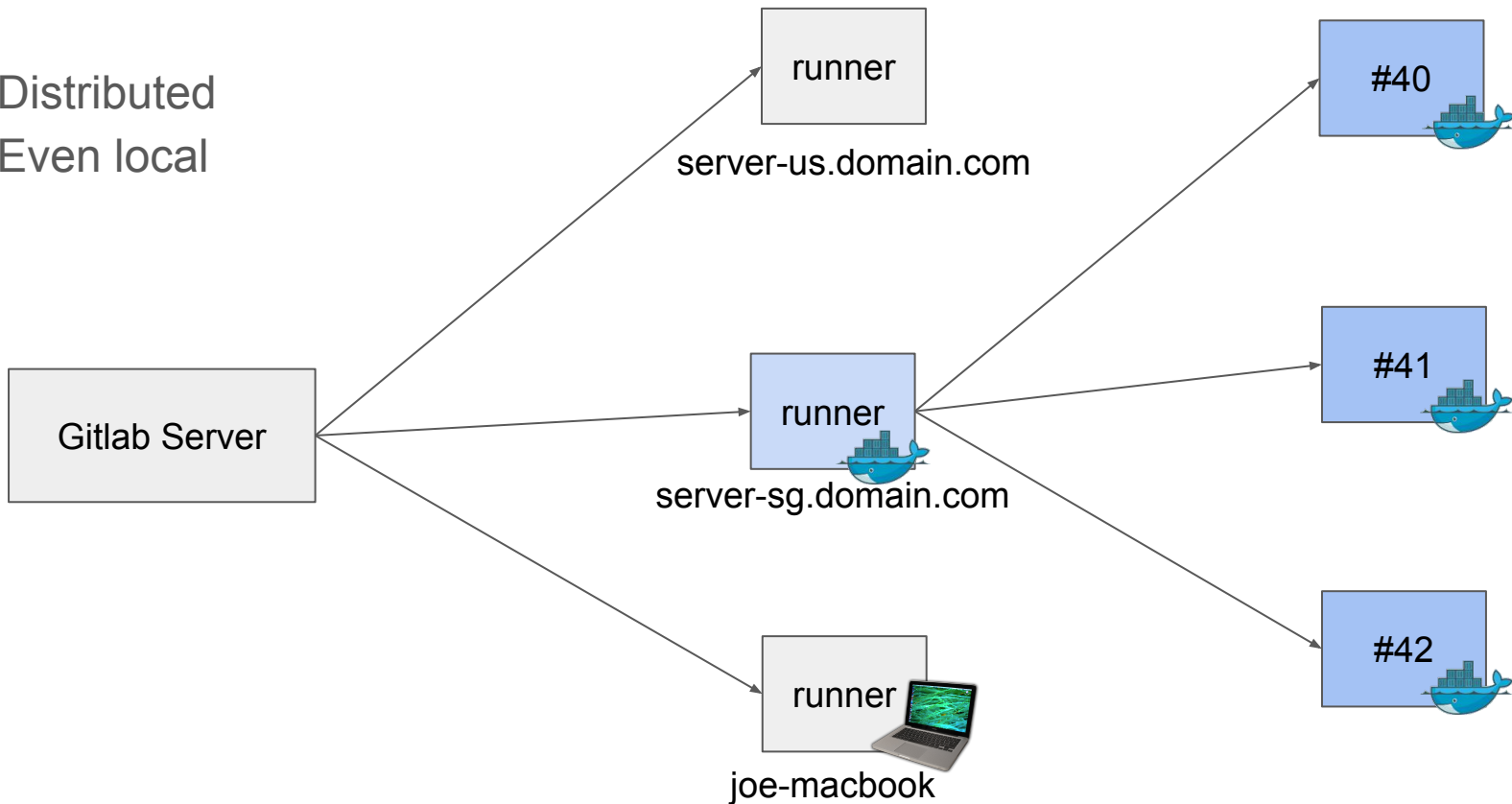
Build #2587

Retry Erase

Duration: 2 minutes 33 seconds
Created: 14 days ago
Finished: 14 days ago
Runner: #39

Commit   dc826f9f

Branch: staging
Author: Joerg Henning
Message: Merge branch
'voucher_attachment' into 'master'
Voucher attachment changed

Gitlab CI Multi Runner

- https://gitlab.com/gitlab-org/gitlab-ci-multi-runner
- Written in Go, single binary
- Linux, Windows, OSX
- Or as Docker container
- Multiple executors - Shell, Docker, VirtualBox, SSH

Runners

- Distributed
- Even local

runner

server-us.domain.com

Gitlab Server

runner

server-sg.domain.com

runner

joe-macbook

#40

#41

#42

As Docker Service

```
# Start runner as container in daemon mode
docker run -d
  --name gitlab-runner \
  --restart always \
  -v /srv/gitlab-runner/config:/etc/gitlab-runner \ # runner config
  -v /var/run/docker.sock:/var/run/docker.sock \     # docker sock
  gitlab/gitlab-runner:latest


# Register runner with CI Server
docker exec -it gitlab-runner gitlab-runner register
```
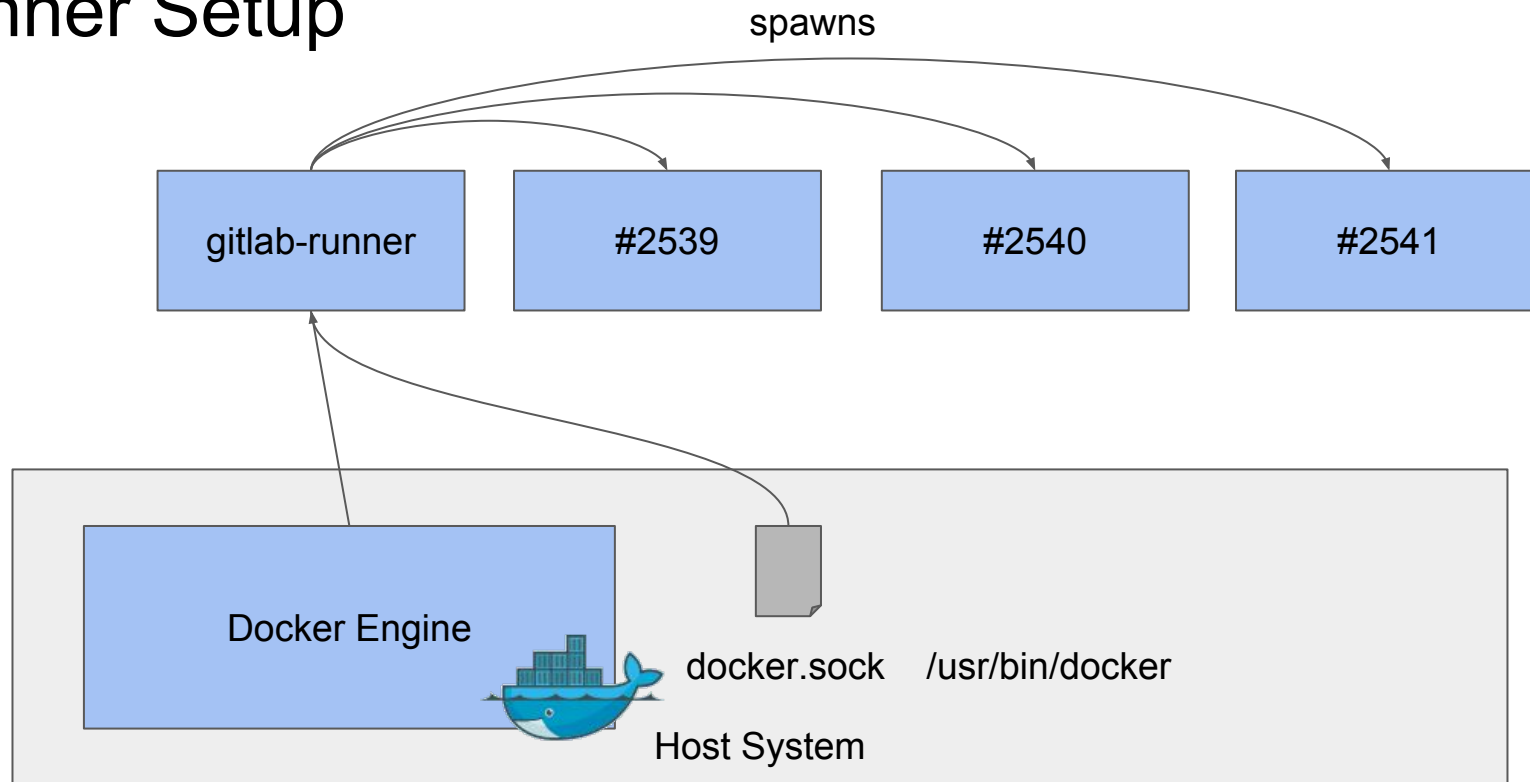
Note: User running this needs to be in group `docker`.

Runner Setup

spawns

gitlab-runner	#2539	#2540	#2541

Docker Engine

docker.sock   /usr/bin/docker

Host System

Docker Executor

- Custom images, services, cache, artifacts (gitlab-ci.yml)
- Caching, artifacts
- Images, from Docker Hub, private registry
- Services
- Persistent storage (volumes=)

```
#gitlab-ci.yml
image: jdoe/node-4
services:
  - mongo:3.0
  - redis:2.8
cache:
artifacts:
test:
  script:
  - npm test
```

Executor Config

- Executor type

- Name (only informative)

- URI of GitLab installation

- Registration token

- Env vars

- etc.

```
[[runners]]
  name = "Road Runner"
  url = "https://git.acme.org/ci"
  token = "{{TOKEN}}"
  executor = "docker"
  environment = ["ENV=value"]
```

Executor Config (Runner)

- Default image (overridden in gitlab-ci.yml)
- Default services (added to the ones in `.gitlab-ci.yml`)
- Private registry for image, services
- Privileged ("dockerception")
- Volumes, caches (arbitrary stuff from host - npm cache, etc.)
- Image whitelist, etc.

```
[[runners]]
executor = "docker"
[runners.docker]
  image = "ruby:2.1"
  privileged = false
  volumes = ["/data"]
  services = ["mysql", "redis:2.8"]
  allowed_images = ["ruby:*"]
  allowed_services = ["postgres:latest"]
```

Advanced

- Autoscaling (docker-machine)

- Auto cleanup

- Docker-in-Docker

Demo

```
#/srv/gitlab-runner/config/config.toml
concurrent = 1

[[runners]]
  name = "demo"
  url = "http://192.168.33.20/ci"
  token = "0cedbafa816f5b80a496f47c4c2e1e"
  executor = "docker"
  environment = ["npm_config_cache=/cache/npm","MYSQL_ALLOW_EMPTY_PASSWORD=1"]
  [runners.docker]
    tls_verify = false
    image = "debian:jessie"
    privileged = false
    disable_cache = false
    volumes = ["/var/cache:/cache:rw","/home/vagrant/.ssh:/root/.ssh:ro"]
    services = ["mysql"]
```