



Continuous Integration for Fun and Profit

Arnold Bechtoldt

Darmstadt, 16.06.2016

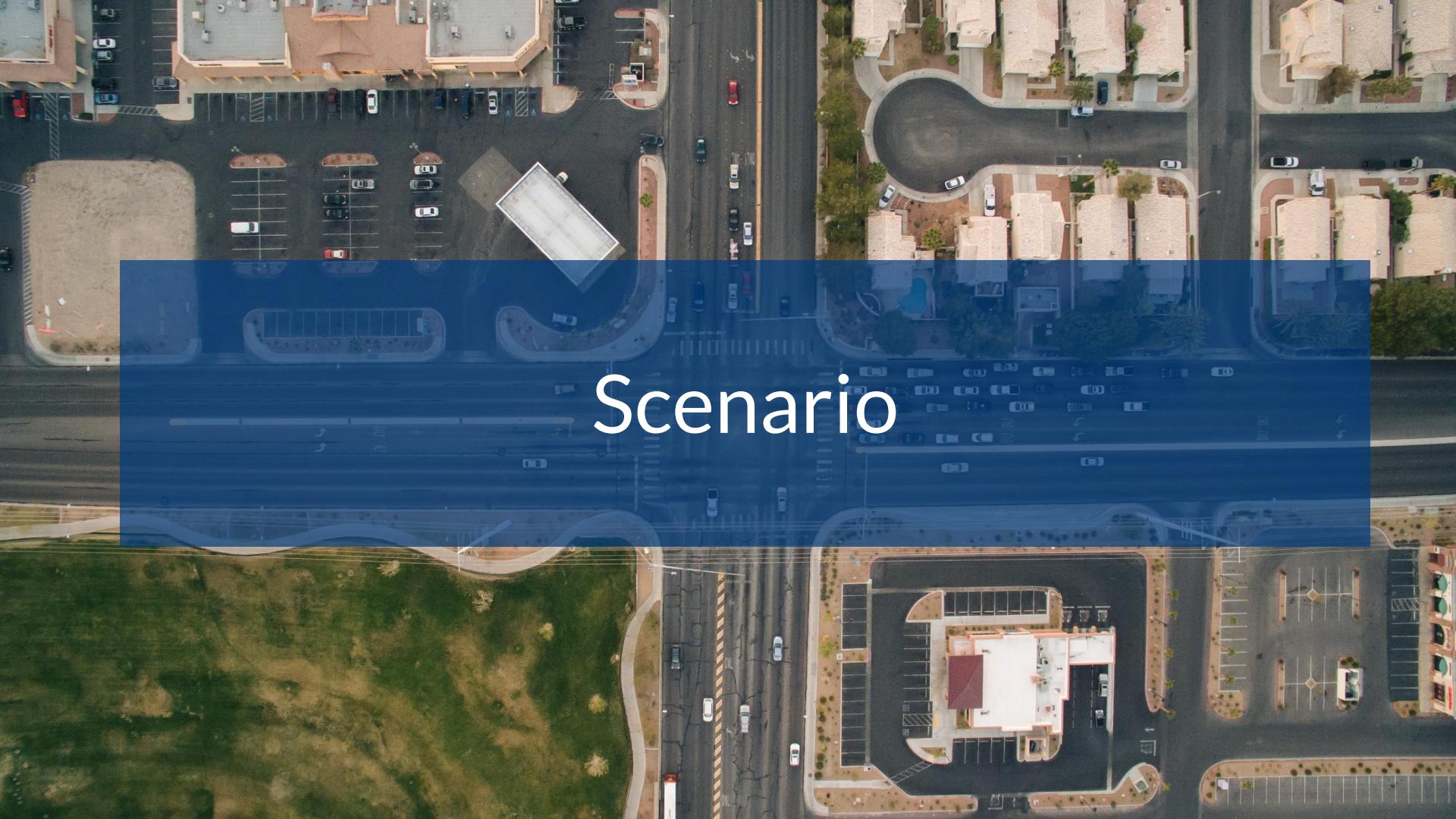


Arnold Bechtoldt

Systems Engineer / Consultant @ inovex

- › Software-Defined Datacenters
- › Continuous Integration/Delivery
- › DevOps

WE'RE
HIRING!

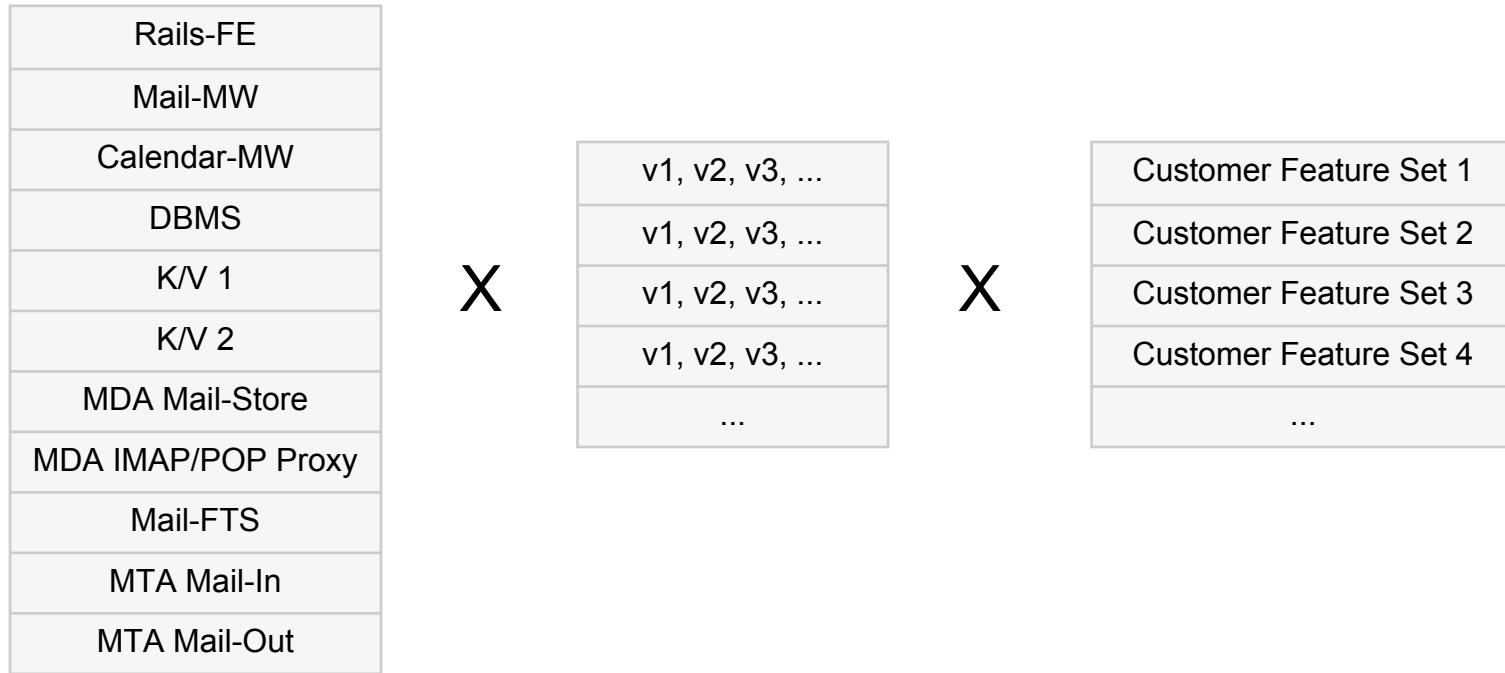
An aerial photograph of a suburban area. On the left, there's a large parking lot with several cars and a building with a brown roof. In the center, a multi-lane road with a median and some trees. To the right, there are several houses with tan roofs arranged in a grid pattern. A blue rectangular overlay covers the middle portion of the image, containing the word "Scenario".

Scenario

The Product



Test Matrix





Sad Stories from Real World

We can't run integration tests in parallel.





Running all of our tests takes ages.



Our integration tests are fragile.

Producing a bugfix release is hard work.





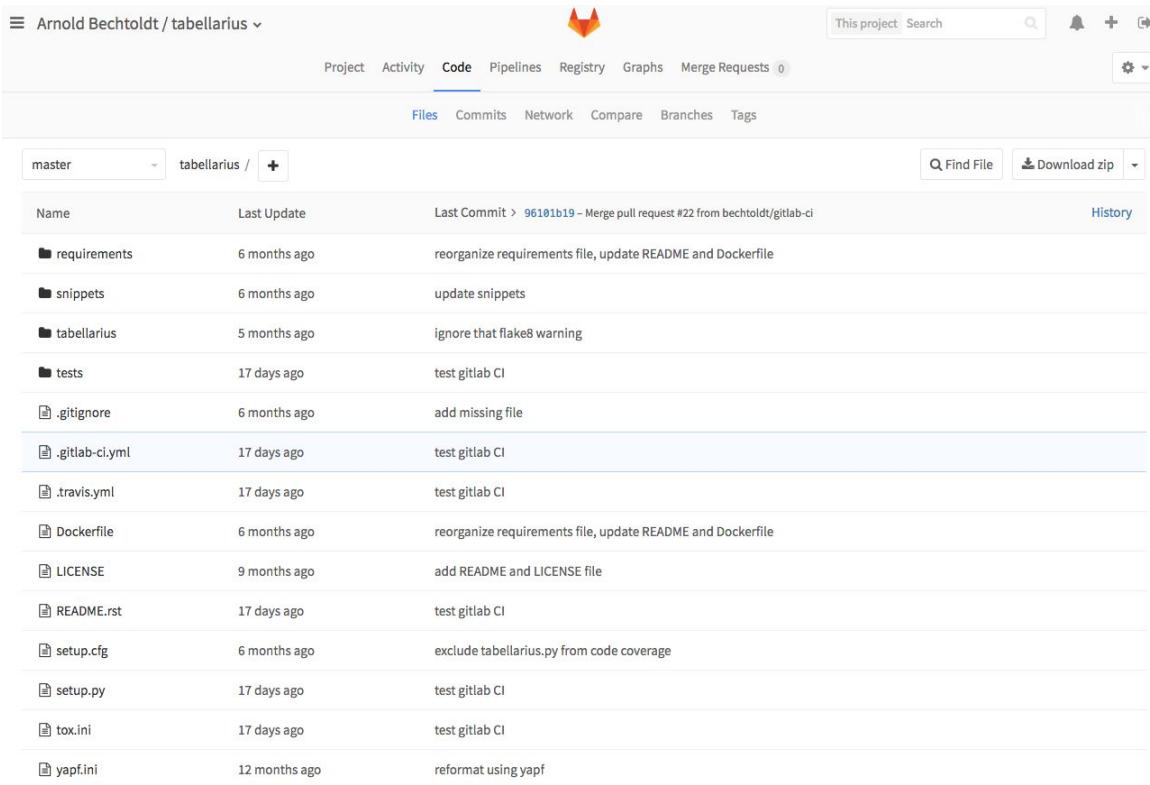
Time For A Plan

The Plan: Building A Private Travis CI Clone



Travis CI

GitLab to the Rescue!



Arnold Bechtoldt / tabellarius

This project Search

Project Activity Code Pipelines Registry Graphs Merge Requests 0

Files Commits Network Compare Branches Tags

master tabellarius / +

Find File Download zip

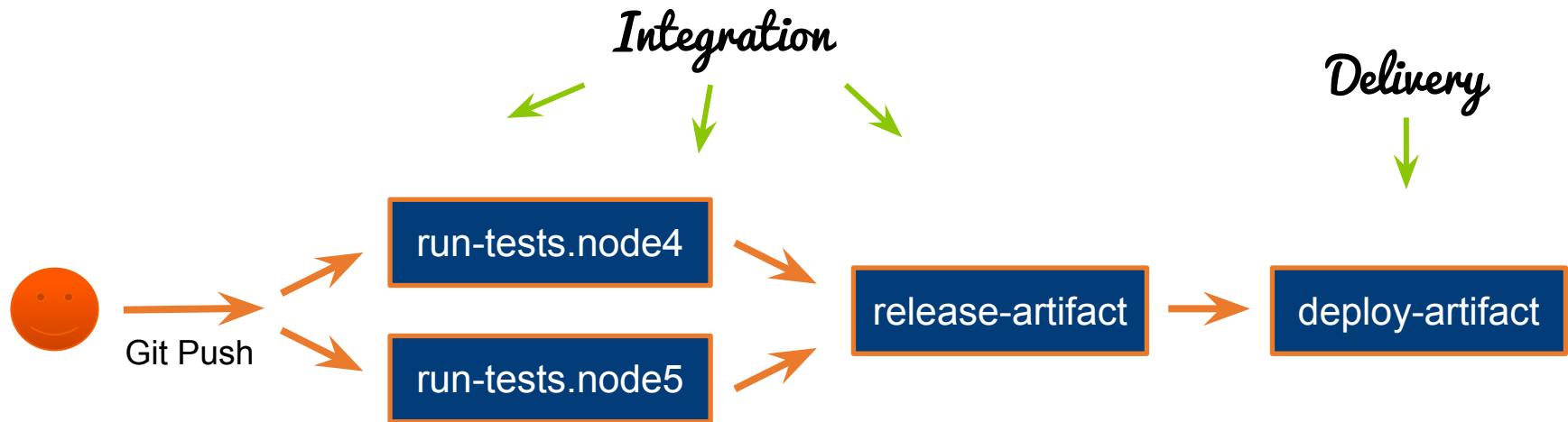
Name	Last Update	Description	History
requirements	6 months ago	reorganize requirements file, update README and Dockerfile	
snippets	6 months ago	update snippets	
tabellarius	5 months ago	ignore that flake8 warning	
tests	17 days ago	test gitlab CI	
.gitignore	6 months ago	add missing file	
.gitlab-ci.yml	17 days ago	test gitlab CI	
.travis.yml	17 days ago	test gitlab CI	
Dockerfile	6 months ago	reorganize requirements file, update README and Dockerfile	
LICENSE	9 months ago	add README and LICENSE file	
README.rst	17 days ago	test gitlab CI	
setup.cfg	6 months ago	exclude tabellarius.py from code coverage	
setup.py	17 days ago	test gitlab CI	
tox.ini	17 days ago	test gitlab CI	
yapf.ini	12 months ago	reformat using yapf	

Improving the Workflow

1. Git-Pushes go to feature/bugfix branches
2. Every Git-Push triggers a test
3. Tests run in prod-like environments
4. Tests run in isolated/dedicated environments
5. Master branch keeps “stable”
6. Make it easy to improve/add tests



Pipeline (simplified)



GitLab CI Config

```
stages:
  - tests
  - release
  - deploy

run-tests.node4:
  stage: tests
  image: node4
  script:
    - npm test

run-tests.node5:
  stage: tests
  image: node5
  script:
    - npm test

release-artifact:
  stage: release
  script:
    - npm release.prod

deploy-artifact:
  stage: deploy
  only:
    - tags
  script:
    - npm deploy.qa
```

GitLab Code Build Status

test gitlab CI

Request to merge [gitlab-ci](#) into [master](#)

[Check out branch](#) [Download as](#)

CI build running for 87e0861b. [View details](#)

[Merge When Build Succeeds](#) Remove source branch Modify commit message

You can also accept this merge request manually using the [command line](#).

Discussion 0 Commits 1 Builds 5 Changes 7

[Cancel running](#)

Status	Build ID	Name	Tags	Duration	Finished at
Tests					
running	#1541647	check-code-style		46 seconds	X
running	#1541646	find-tasks		46 seconds	X
running	#1541648	test-integration:py3.3		43 seconds	X
running	#1541649	test-integration:py3.4		43 seconds	X
running	#1541650	test-integration:py3.5		40 seconds	X

GitLab CI Pipeline

ID	Commit	Builds	Tests	Deploys	
✓ #3368050	master · 6383560f latest see if a change happens	✓	✓	✓	⌚ 6 minutes 5 seconds 📅 41 minutes ago Download
✓ #3368024	master · ae4fe55f Merge branch 'remote-work-section' into 'master'	✓	✓	✓	⌚ 7 minutes 30 seconds 📅 about an hour ago Download
✓ #3368009	master · d2c75caf use artifacts passings to deploy	✓	✓	✓	⌚ 11 minutes 54 seconds 📅 about an hour ago Download

GitLab CI Pipeline (2)

Status	Build ID	Commit	Ref	Stage	Name	Duration	Finished at	CI	
✓ passed	#1369	e6502d41	master	release	release	59 seconds	6 days ago	C	
✗ failed	#1361	e6502d41	master	integrationtests	test-integration:store2.2.23	allowed to fail	10 minutes 32 seconds	6 days ago	C
✓ passed	#1360	e6502d41	master	integrationtests	test-integration:store2.2.18		10 minutes 20 seconds	6 days ago	C
✗ failed	#1358	e6502d41	master	unitests	test-unit:store2.2.23	allowed to fail	1 minute 47 seconds	6 days ago	C
✓ passed	#1357	e6502d41	master	unitests	test-unit:store2.2.18		2 minutes 23 seconds	6 days ago	C
✗ failed	#1165	f34f9ecc	migrate_to_gitlabci	integrationtests	test-integration:store2.2.23	allowed to fail	10 minutes 33 seconds	7 days ago	C
✓ passed	#1164	f34f9ecc	migrate_to_gitlabci	integrationtests	test-integration:store2.2.18		9 minutes 15 seconds	7 days ago	C
✓ passed	#1163	f34f9ecc	migrate_to_gitlabci	unitests	test-unit:store2.2.18		2 minutes 3 seconds	7 days ago	C
✗ failed	#1162	f34f9ecc	migrate_to_gitlabci	unitests	test-unit:store2.2.23	allowed to fail	1 minute 55 seconds	7 days ago	C

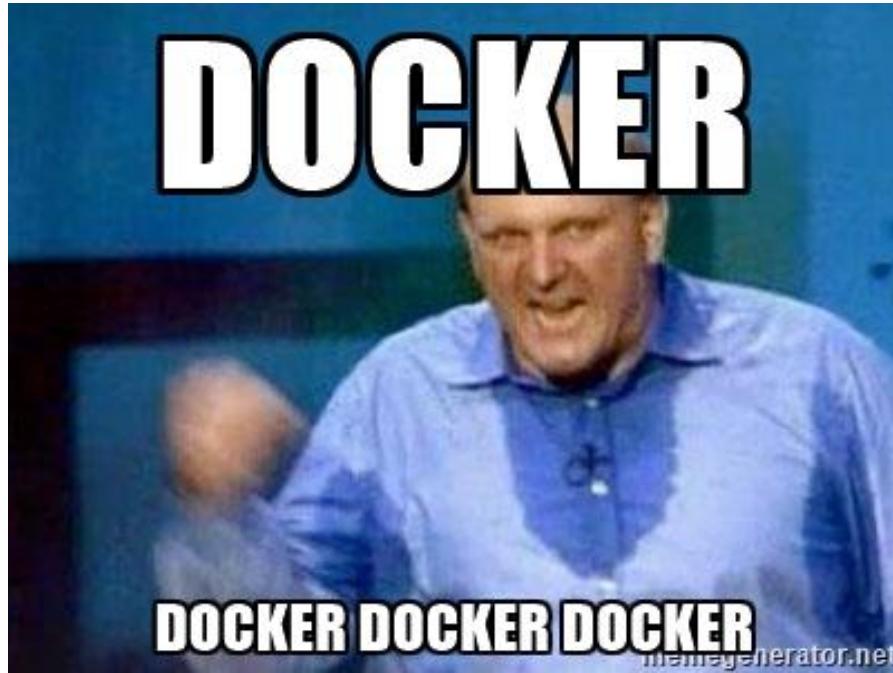
A collage of images depicting various scenes of work and study. One prominent image in the center shows a person's hands writing in a spiral notebook on a desk, with a blue mug and a laptop keyboard visible. Other smaller images show people working at desks with laptops, notebooks, and coffee cups.

Conclusions

Conclusions

- › Spawning integration test environments at ludicrous speed
- › Similarity to production leads to faster bugfixing
- › Isolated testing improves test (=product) quality
- › Parallel testing increases work efficiency

A voice in my head..



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github.com/bechtoldt

inovex.de

arbe.io

+ArnoldBechtoldtGER

youtube.com/inovexGmbH

Backup

GitHub/Travis Code Build Status

add Gitlab ci config, improve tests #22

[Open](#) bechtoldt wants to merge 8 commits into `master` from `gitlab-ci`

Conversation 1 Commits 8 Files changed 7

bechtoldt commented 17 hours ago
No description provided.

bechtoldt self-assigned this 17 hours ago

bechtoldt added some commits a day ago

- test gitlab CI
- make it export
- add integration for cov test too
- set correct redis port
- reduce flake8 warnings

bechtoldt added some commits 16 hours ago

- trying to modify test order
- fix that damn typo
- reduce pep8 warnings

a0bb062
39e62de
81df865
b13064f
d5a7896
817253c
e33d878
ea0c10d

fix that damn typo
reduce pep8 warnings

coveralls commented 7 minutes ago
coverage 100%
Coverage remained the same at 99.81% when pulling [e33d878](#) on `gitlab-ci` into [8ba7faa](#) on `master`.

Add more commits by pushing to the `gitlab-ci` branch on **bechtoldt/tabellarius**.

Some checks haven't completed yet
2 pending checks

continuous-integration/travis-ci/pr — The Travis CI build is in progress
continuous-integration/travis-ci/push — The Travis CI build is in progress

This branch has no conflicts with the base branch
Merging can be performed automatically.

Merge pull request You can also open this in GitHub Desktop or view command line instructions.

Travis CI Pipeline

bechtoldt / tabellarius  build passing

Current Branches [Build History](#) Pull Requests

  Arnold Bechtoldt	test gitlab CI	-o- #267 started 87e8861
 ✓  Arnold Bechtoldt	reduce pep8 warnings	-o- #265 passed ea0c10d
 ✗  Arnold Bechtoldt	fix that damn typo	-o- #263 failed e33d870
 ✗  Arnold Bechtoldt	trying to modify test order	-o- #262 failed 817253c
 ✗  Arnold Bechtoldt	reduce flake8 warnings	-o- #259 failed d5a7896

Travis CI Pipeline (2)

Current Branches Build History Pull Requests > [Build #267](#)

gitlab-ci test gitlab Ci

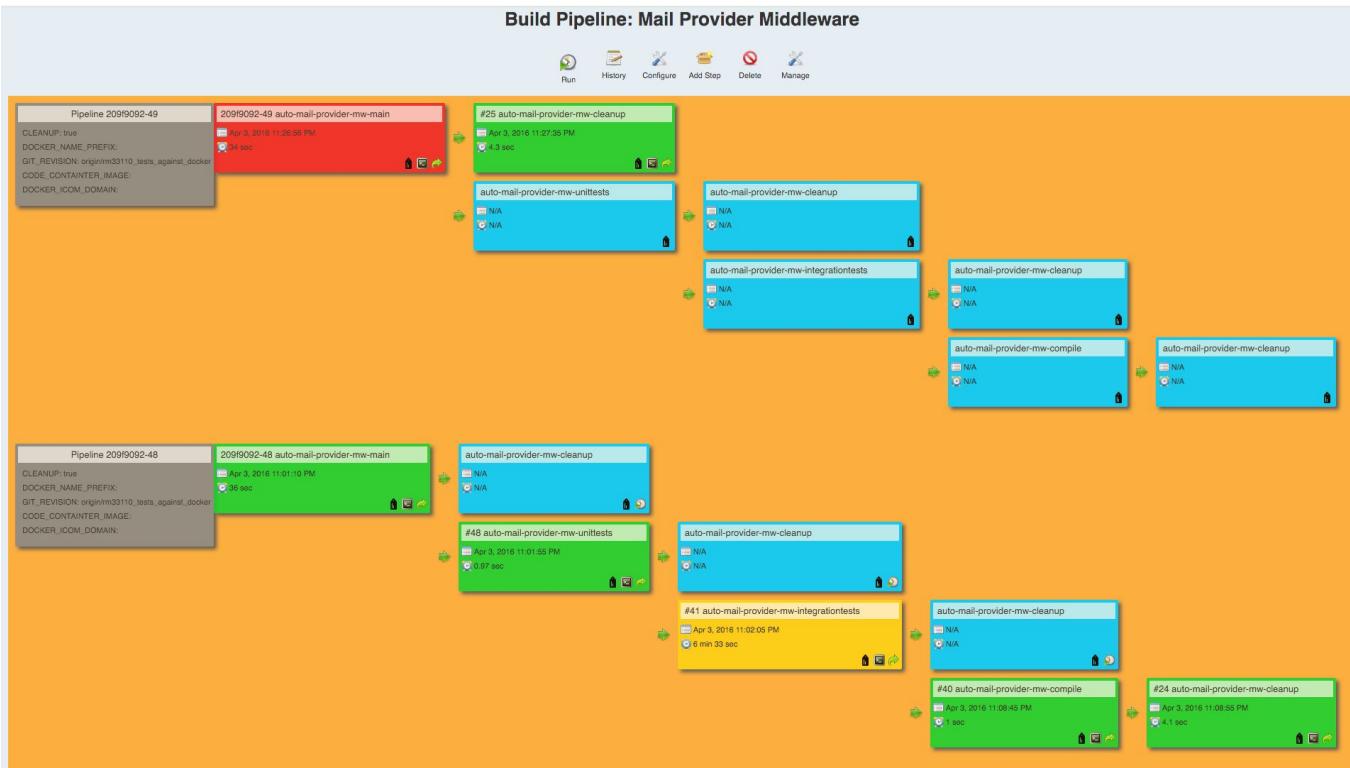
Commit 87e8861
Compare ea0c10d..87e8861
Arnold Bechtoldt authored and committed

#267 started
Elapsed time 52 sec
Running for 52 sec

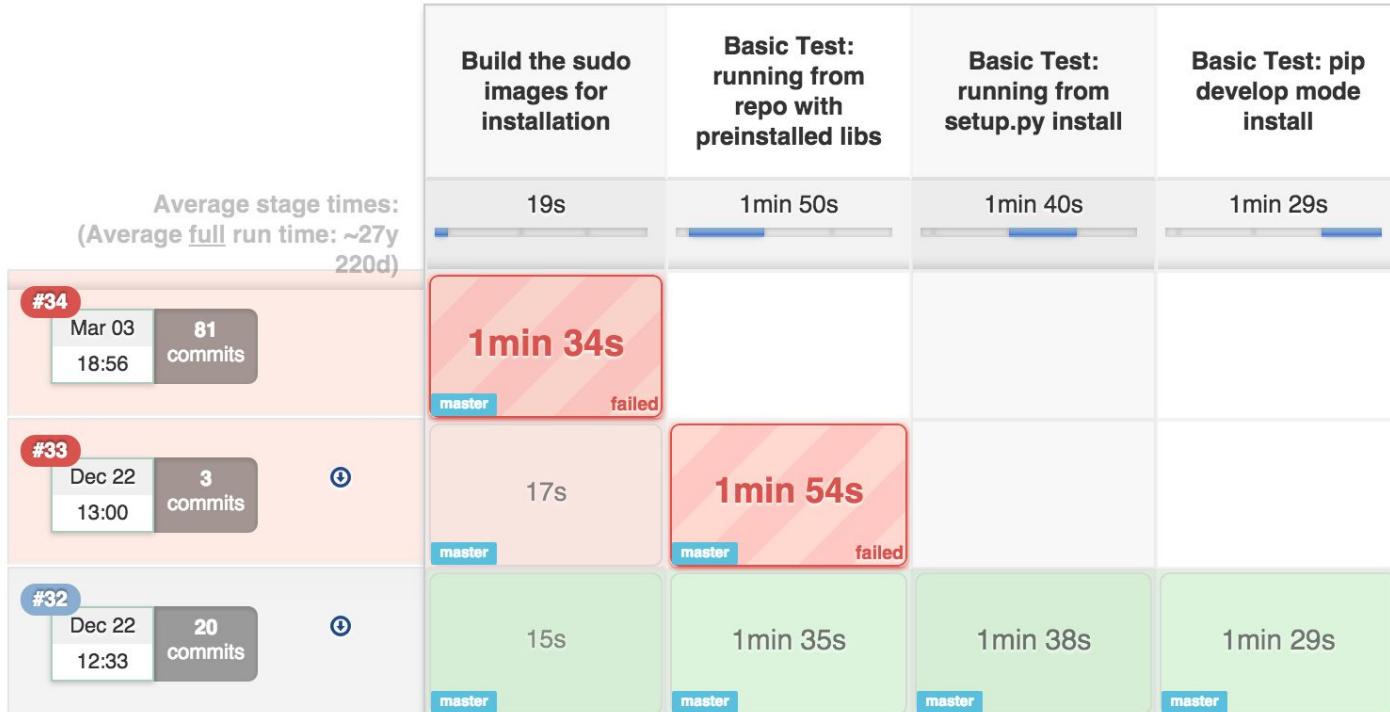
Build Jobs

# 267.1	Python: 3.3	TOX_ENV=app_tests_min START_INTEGRATION_SERVERS=yes	~
# 267.2	Python: 3.4	TOX_ENV=app_tests_min START_INTEGRATION_SERVERS=yes	27 sec
# 267.3	Python: 3.5	TOX_ENV=app_tests_cov_upload START_INTEGRATION_SERVERS=yes	34 sec
# 267.4	Python: 3.5	TOX_ENV=app_flake8	36 sec
# 267.5	Python: 3.5	TOX_ENV=tests_flake8	52 sec

Jenkins CI Pipeline



Jenkins CI Pipeline (3)



Jenkins CI Pipeline (4)

Jenkins / Blue Ocean #423

Branch master
Commit #601366d
Changes by Michael Neale, Ben Waldo and Ivan Meredith

3 minutes and 42 seconds
14 minutes ago

Pipeline Changes Tests Artifacts Re-run

Build Test Browser Tests Dev Staging Production

JUnit DBUnit Jasmine Firefox Edge Safari Chrome

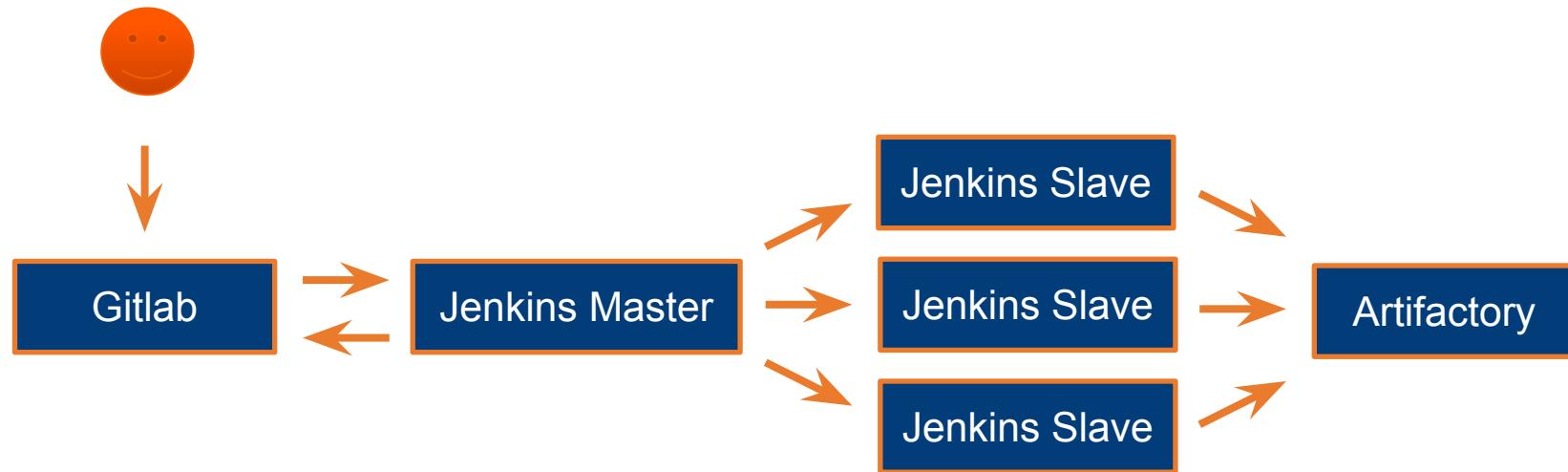
Build log - Edge

> Start Docker container	3 minutes and 42 seconds
> Warm maven caches	5 seconds
> Install Java Tools	8 seconds
> Maven	6 minutes and 12 seconds

The screenshot shows the Jenkins Blue Ocean interface for a pipeline named "Jenkins / Blue Ocean #423". The pipeline consists of several stages: Build, Test, Browser Tests, Dev, Staging, and Production. The Build stage is marked as successful (green checkmark). The Test stage contains sub-stages JUnit, DBUnit, and Jasmine, all of which are successful. The Browser Tests stage contains sub-stages Firefox, Edge, Safari, and Chrome, with Firefox and Edge marked as successful (green checkmarks) and Safari and Chrome marked as failed (red X). The Dev, Staging, and Production stages are currently empty circles. Below the pipeline diagram, there is a "Build log" section for the Edge stage, which lists the following steps and their execution times:

- > Start Docker container: 3 minutes and 42 seconds
- > Warm maven caches: 5 seconds
- > Install Java Tools: 8 seconds
- > Maven: 6 minutes and 12 seconds

Jenkins CI Architecture



Toolset

Tool	Purpose
GitLab	Git Repository + CI Server
Docker	Container <i>Technology</i>
Docker-Compose	Container/Service Management
Bash + Confd	Image/Container Configuration
Artifactory	Artifact Repository