

Survey on Methods for DevOps & Site Reliability Engineers

Seminar Talk

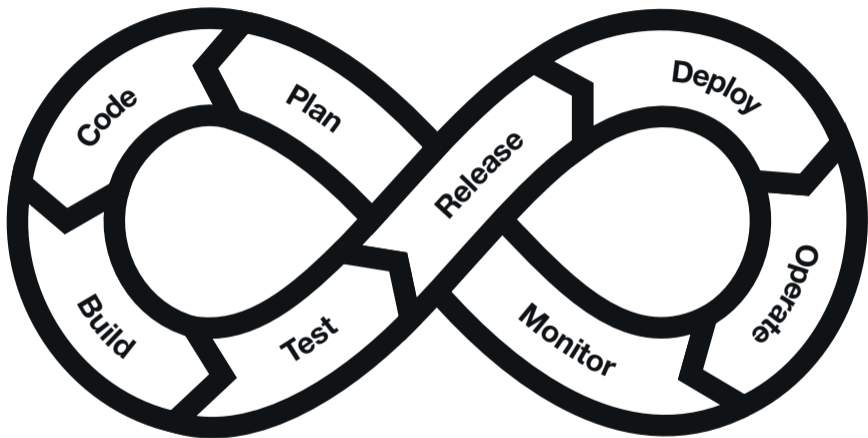
Alexander Bartolomey

Advisor: Dr. Jan R uth

<https://comsys.rwth-aachen.de/>

Aachen, 2021-07-23

What even is *DevOps?*



**But I've read that DevOps
is a culture and not a job?
What is it, then?**



DevOps

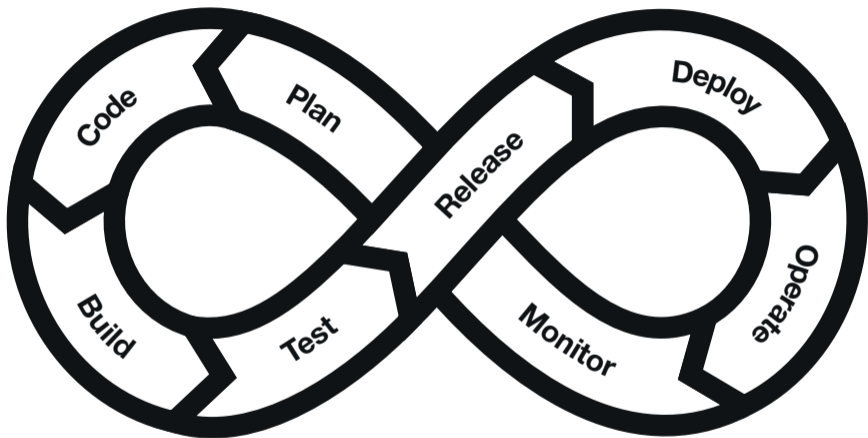


Release
Velocity

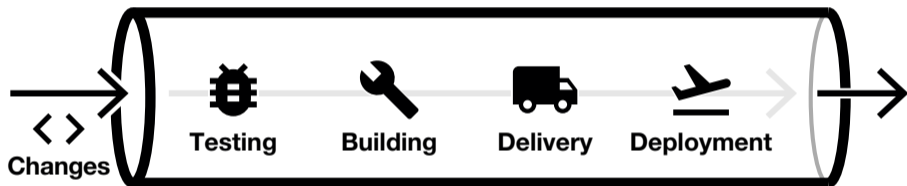
Reliability

Security

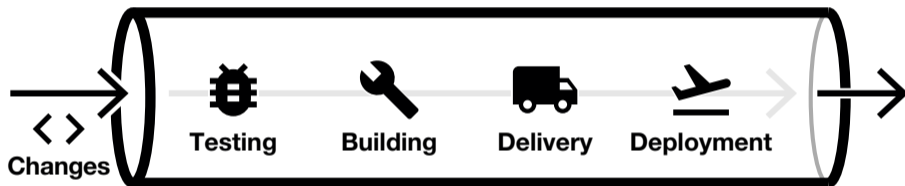
Communication & Collaboration



The CI/CD Pipeline



The CI/CD Pipeline



Travis CI

[1],[2],[3],[4],[5]

- A
- Project information
- Repository
- Issues 0
- Merge requests 0
- CI/CD
- Pipelines**
- Editor
- Jobs
- Schedules
- Security & Compliance
- Deployments
- Monitor
- Infrastructure
- Packages & Registries
- Analytics
- Wiki
- Snippets
- Settings

passed Pipeline #333270053 triggered 4 days ago by Alexander Bartolomey

deps: upgrade packages

Signed-off-by: Alexander Bartolomey <occlonium@gmail.com>

10 jobs for main in 10 minutes and 20 seconds (queued for 12 seconds)

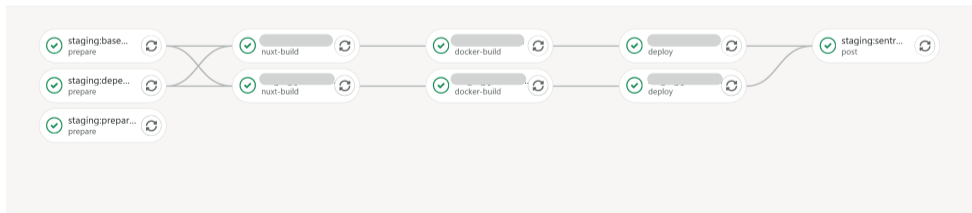
latest

1fc362ab

No related merge requests found.

Pipeline Needs Jobs 10 Tests 0

Group jobs by Stage Job dependencies Show dependencies





Search or jump to...

Pull requests Issues Marketplace Explore



actions / example-services

Watch 22

Star 168

Fork 178

Code Issues 7 Pull requests 9 Actions Projects Wiki Security Insights

Workflows

All workflows

Mongodb Service Example

MySQL Service Example

Postgres Service Example

Redis Service Example

All workflows

Showing runs from all workflows

Filter workflow runs

88 workflow runs

Event Status Branch Actor

<p> Bump bson from 1.1.3 to 1.1.6 in /mongodb</p> <p>Mongodb Service Example #12: Pull request #65 opened by dependabot (bot)</p>	dependabot/npm_and_yarn/mon...	2 months ago	50s	...
<p> Bump bson from 1.1.3 to 1.1.6 in /mongodb</p> <p>Redis Service Example #13: Pull request #65 opened by dependabot (bot)</p>	dependabot/npm_and_yarn/mon...	2 months ago	42s	...
<p> Bump bson from 1.1.3 to 1.1.6 in /mongodb</p> <p>Postgres Service Example #13: Pull request #65 opened by dependabot (bot)</p>	dependabot/npm_and_yarn/mon...	2 months ago	58s	...
<p> Bump redis from 2.8.0 to 3.1.1 in /redis</p> <p>Redis Service Example #12: Pull request #64 opened by dependabot (bot)</p>	dependabot/npm_and_yarn/red...	3 months ago	48s	...

LineageOS / android-nightly Public

Start nightly builds



All Builds ▾

main



nightly

LineageOS Infrastructure — Build #645 (e045c94) — Today at 04:00

Passed in 8h



nightly

LineageOS Infrastructure — Build #644 (e045c94) — Yesterday at 04:00

Passed in 7h



nightly

LineageOS Infrastructure — Build #643 (e045c94) — Friday at 04:00

Passed in 5h



nightly

LineageOS Infrastructure — Build #642 (e045c94) — Thursday at 04:00

Passed in 8h



nightly

LineageOS Infrastructure — Build #641 (e045c94) — Wednesday at 04:00

Passed in 6h

lineage-16.0



nightly

LineageOS Infrastructure — Build #575 (341c782) — Fri 30th Apr at 04:00

Failed in 2s



nightly

LineageOS Infrastructure — Build #574 (63e3df7) — Thu 29th Apr at 04:00

Passed in 14h



nightly

LineageOS Infrastructure — Build #573 (63e3df7) — Tue 27th Apr at 04:00

Failed in 9h



nightly

Passed in 7h

seminar-advanced-inter...

Alexander Bartolomey > seminar-advanced-internet-technologies-2021 > Pipelines > #502625

Project information

Repository

Issues 1

Merge requests 0

Requirements

CI/CD

Pipelines

Editor

Jobs

Schedules

Test Cases

Security & Compliance

Deployments

Monitor

Infrastructure

Packages & Registries

Analytics

Wiki

Snippets

Settings

passed Pipeline #502625 triggered 1 week ago by Alexander Bartolomey

Delete

fix: truncated letters in figure

Signed-off-by: Alexander Bartolomey <occlonium@gmail.com>

5 jobs for main in 2 minutes and 36 seconds (queued for 5 seconds)

latest

1da7e876

No related merge requests found.

Pipeline Needs Jobs 5 Tests 0

Build

build-anonym...

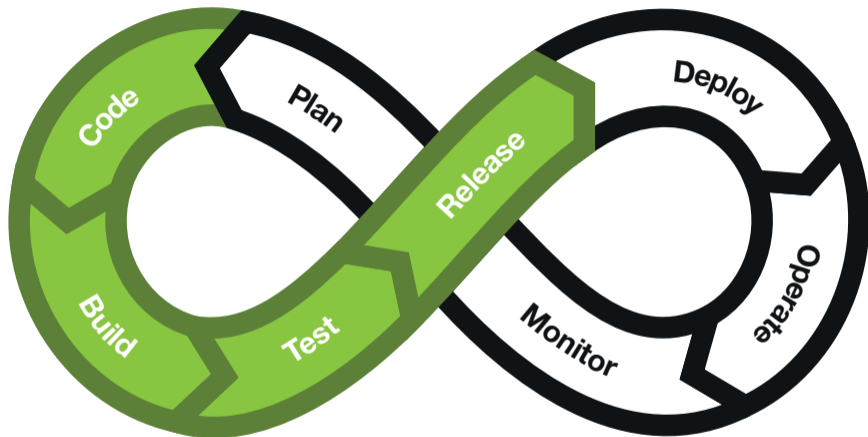
build-full-pa...

build-presen...

latexdiff

Deploy

deploy



What is

Site Reliability Engineering?

Service Level Indicator (SLI)



Service Level Objective (SLO)



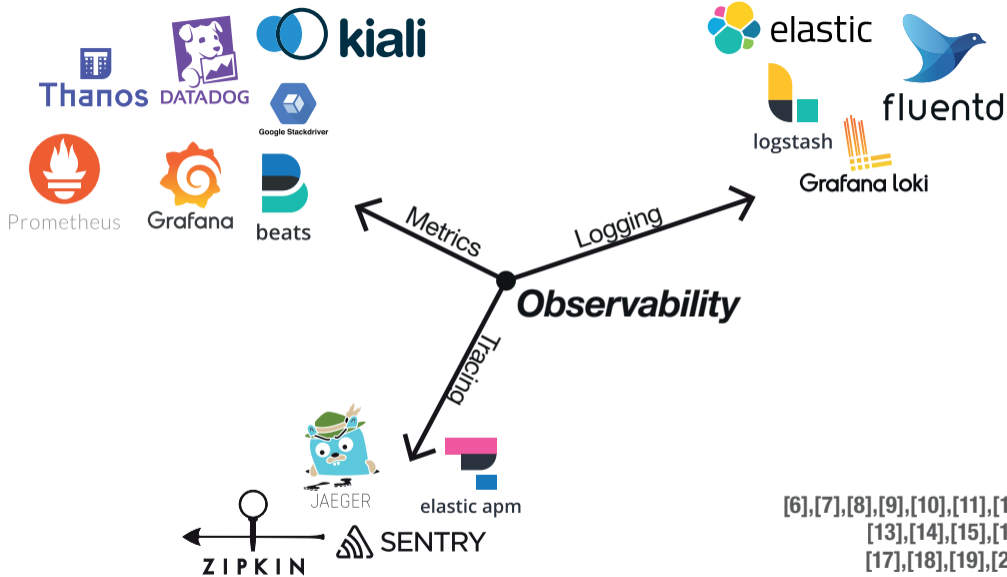
Service Level Agreement (SLA)

Uptime Query Speed
 (Storage) Durability
 Traffic Latency
Throughput Availability

Availability > 99.99%
99% of requests < 1sec response time



Contract



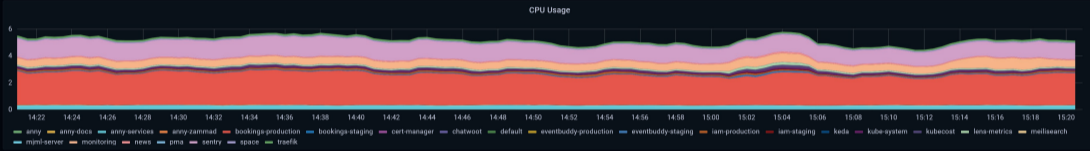
[6],[7],[8],[9],[10],[11],[12]
 [13],[14],[15],[16]
 [17],[18],[19],[20]

datasource prometheus

Headlines

CPU Utilisation 29.2%	CPU Requests Commitment 86.5%	CPU Limits Commitment 239%	Memory Utilisation 47.0%	Memory Requests Commitment 50.7%	Memory Limits Commitment 107%
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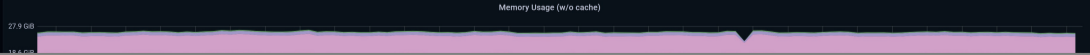
CPU

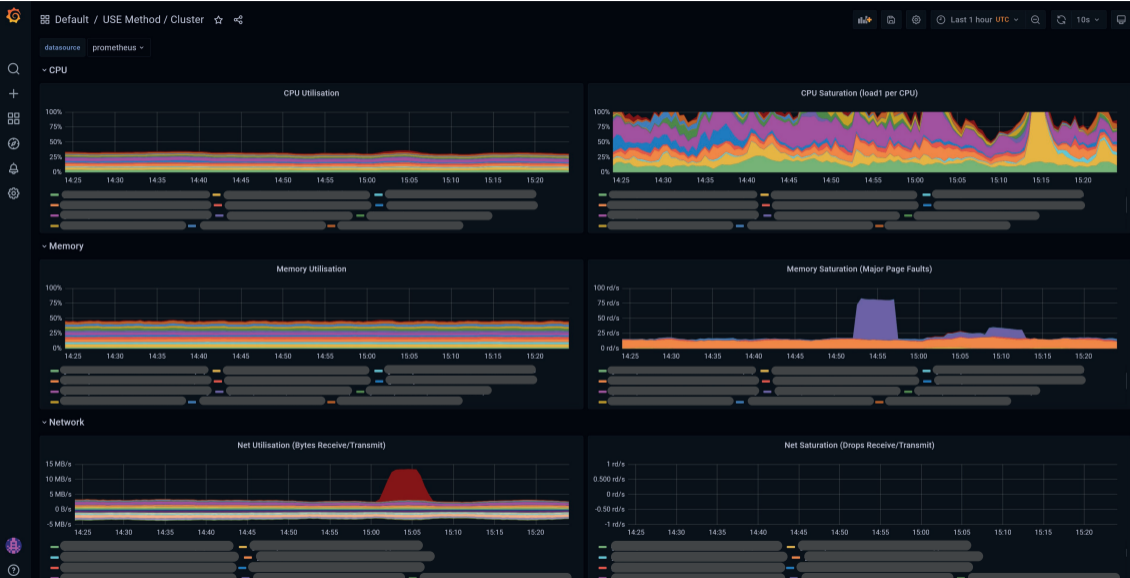


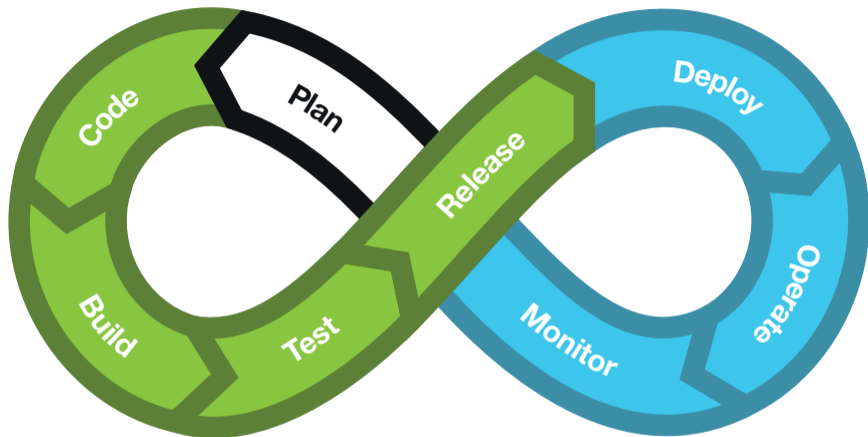
CPU Quota

Namespace	Pods	Workloads	CPU Quota			
			CPU Usage	CPU Requests	CPU Requests %	CPU Limits %
kube-system	53	8	0.12	1.95	6.03%	74.49%
sentry	30	16	1.19	0.03	4765.59%	-
bookings-production	29	13	2.22	7.07	31.15%	13.72%
monitoring	24	8	0.53	1.05	50.25%	10.68%
bookings-staging	21	13	0.04	2.17	1.49%	0.52%
army-services	0	0	0.31	0.77	40.99%	8.26%

Memory







**Change should and
must occur!**

- [1] Jenkins X, <https://jenkins-x.io>
- [2] GitLab, <https://about.gitlab.com>
- [3] Jenkins, <https://www.jenkins.io>
- [4] CircleCI, <https://circleci.com>
- [5] Travis CI, <https://travis-ci.org>
- [6] Prometheus, <https://prometheus.io>
- [7] Thanos, <https://thanos.io>
- [8] Datadog, <https://www.datadoghq.com>
- [9] Grafana, <https://grafana.com>
- [10] Beats, <https://www.elastic.co/de/beats>
- [11] Google Stackdriver, <https://cloud.google.com/products/operations>
- [12] Kiali, <https://kiali.io>
- [13] Elastic, <https://www.elastic.co/de>
- [14] Fluentd, <https://www.fluentd.org>
- [15] Logstash, <https://www.elastic.co/de/logstash>
- [16] Grafana Loki, <https://grafana.com/oss/loki>
- [17] Jaeger, <https://www.jaegertracing.io>
- [18] Zipkin, <https://zipkin.io>
- [19] Sentry, <https://sentry.io/welcome>
- [20] Elastic APM, <https://www.elastic.co/de/apm>