

Site Reliability Engineering

DevOps on Steroids

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Are site reliability engineers the next data scientists?



<https://techcrunch.com/2016/03/02/are-site-reliability-engineers-the-next-data-scientists/>



Salary

Salary by Developer Type

Global **United States**



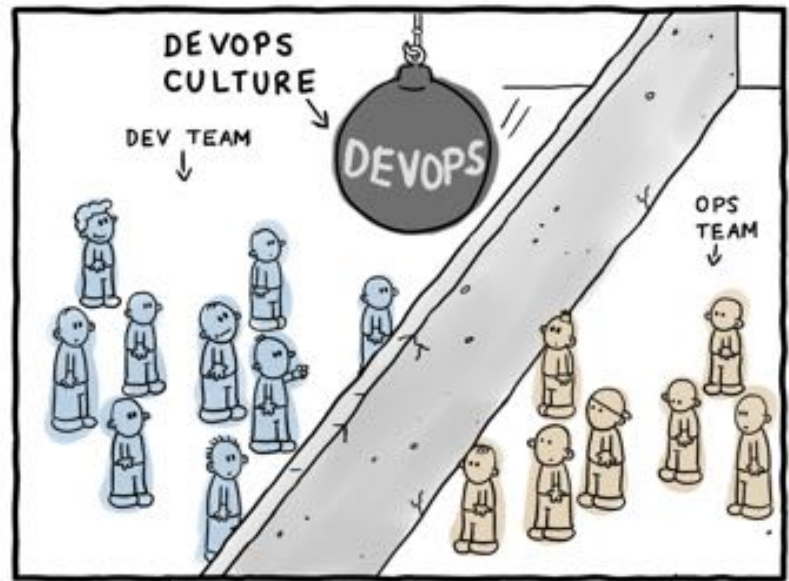
<https://insights.stackoverflow.com/survey/2019>

Site Reliability Engineering

1. Grundlagen
2. Prinzipien
3. Praxis

A photograph of school supplies on a wooden desk. On the left, a stack of four books is topped with a pink apple. In the center, four colored pencils (yellow, green, red, blue) are scattered. On the right, three alphabet blocks are stacked vertically, showing the letters 'A', 'B', and 'C'. A white rectangular box is overlaid on the image, containing the text 'Grundlagen'.

Grundlagen



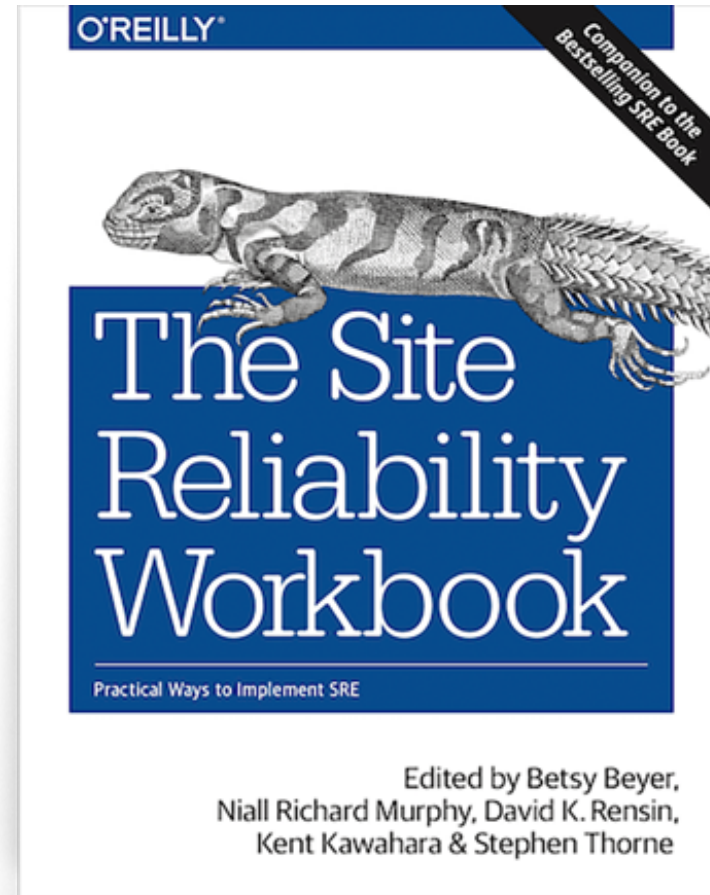
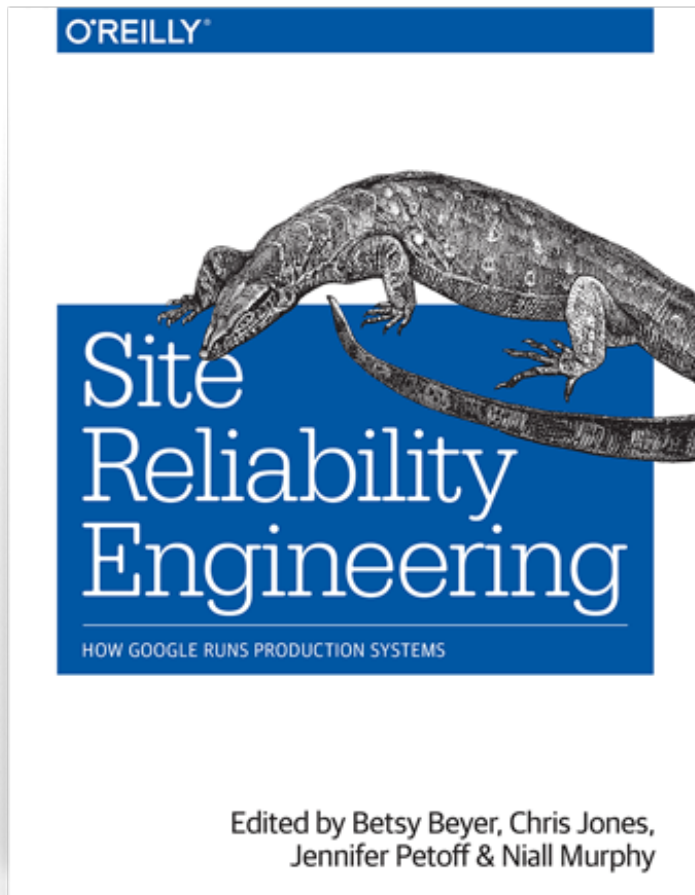
container automation continuous integration
PaaS Iaas automation containers
infrastructure as code cloud collaboration

CRASH



DANIEL STORİ (TURNOFF.US)

Source: <http://turnoff.us/geek/devops-explained/>



Source: <https://landing.google.com/sre/books/>

Site Reliability Engineering

Fundamentally, it's what happens when you ask a software engineer to design an operations function.

Ben Treynor, VP of Engineering, Google



DevOps und SRE als Konkurrenten?

```
class SRE implements DevOps{  
}
```


Wer praktiziert SRE?

- Google
- Apple
- Twitter
- Evernote
- Atlassian
- The Home Depot
- The New York Times
- und viele mehr...



Prinzipien

Umgang mit Risiko

Hope is not a strategy.

Metriken als Basis für Entscheidungen

The image shows a laptop screen with a data dashboard. The dashboard features several line graphs and charts on a grid background. A semi-transparent white box is overlaid on the top half of the screen, containing the text 'Metriken als Basis für Entscheidungen'. The background of the image is a blurred office setting.

Service Level Objectives

SLI

Indikator

SLO

Objective, Ziel

SLA

Agreement, Übereinkommen

Error Budgets

Balance Entwicklungsgeschwindigkeit ↔ Zuverlässigkeit



Automatisierung

Eliminating toil



Praxis

- Projekterfahrung

An aerial photograph showing a vast expanse of white, fluffy clouds. The clouds are dense and cover most of the lower two-thirds of the frame. Above the clouds, the sky is a clear, bright blue. A semi-transparent white rectangular box is centered horizontally and vertically, containing the word "Cloud" in a black, sans-serif font.

Cloud

Infrastructure as Code

```
resource "aws_lambda_function" "serverless_test" {  
  filename      = "my_code.zip"  
  function_name = "lambda_function_name"  
  role          = "${aws_iam_role.iam_for_lambda.arn}"  
  handler       = "serverless.handler"  
  
  source_code_hash = "${filebase64sha256("my_code.zip")}"  
  
  runtime = "python3.7"  
}
```



Source: <https://www.terraform.io/logos.html>



Containers



Source: <https://blog.docker.com/2013/06/announcing-new-docker-style/>



kubernetes

Source: <https://github.com/cncf/artwork>

GitOps

CI/CD

The screenshot displays the GitLab CI/CD interface for a pipeline. At the top, the GitLab logo and navigation menu are visible. The pipeline is titled "Merge branch 'master' into fix-app-layout-form-description" and is currently running. A "Cancel running" button is present in the top right corner. Below the title, there are two security alerts: "SAST detected 66 vulnerabilities" and "Dependency scanning detected 119 vulnerabilities". The pipeline graph shows five stages: Build, Prepare, Test, Post-test, and Post-cleanup. The Build stage has one job, "review-docs-d...". The Prepare stage has three jobs: "compile-assets", "retrieve-tests-...", and "setup-test-env". The Test stage has six jobs: "code_quality", "danger-review", "db:check-sche...", "db:migrate.res...", "db:migrate.res...", and "db:rollback-my...". The Post-test stage has three jobs: "coverage", "faky-examples...", and "lint:javascript.r...". The Post-cleanup stage has one job, "review-docs-d...". All jobs in the graph are marked with a green checkmark, indicating they have completed successfully.

Source: <https://about.gitlab.com/press/press-kit/>

Monitoring

Three Pillars of Observability

- Structured Logging
- Metrics
- Traces

Metriken

Four Golden Signals

- Latenz
- Traffic
- Fehlerrate
- Auslastung

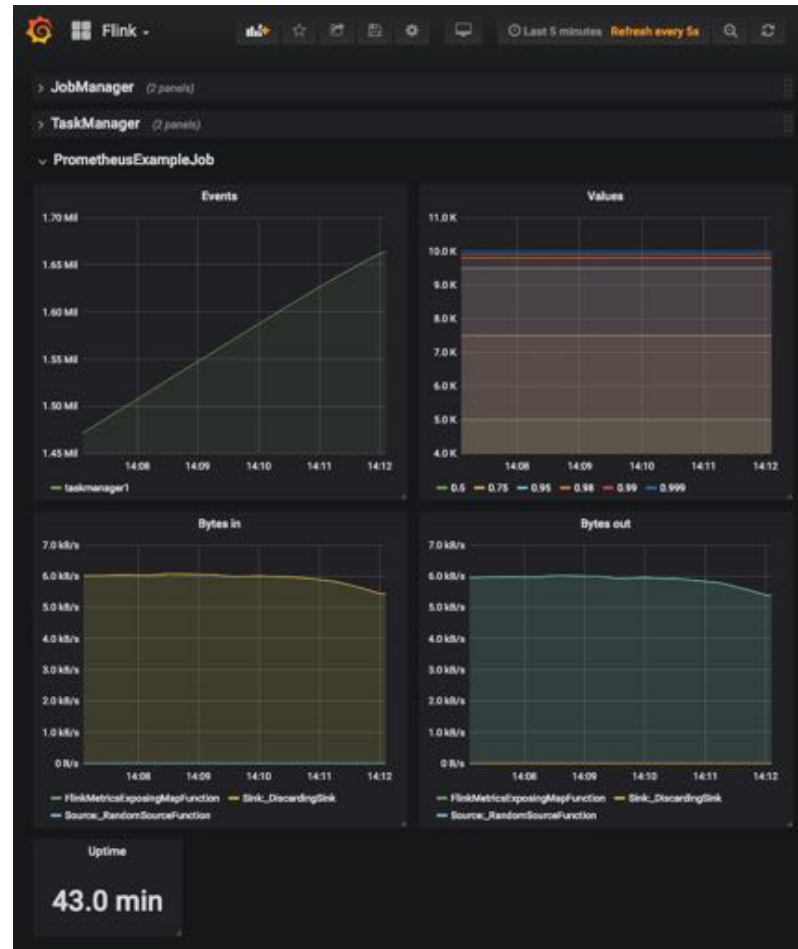
Metriken

Prometheus



Source: https://en.wikipedia.org/wiki/File:Prometheus_software_logo.svg

Dashboards





Alarme

```
- alert: FlinkJobsMissing
  expr: sum(flink_api_jobs_running) < 2
  for: 3m
  annotations:
    summary: Fewer Flink jobs than expected are running.
```

Teamstruktur

- Ad-Hoc-Aufgaben vs. langfristige Verbesserungen
- *Operations Manager*

Incident Management

Incident Postmortem

- Schriftliche Aufzeichnung nach Zwischenfall
- *Blameless*
- Kommunikation (intern & extern)
- Auswirkungen
- Maßnahmen
- Root Cause

Postmortem Template

- > Problem summary
- > Root causes and trigger

Lessons learned

- > Things that went well
- > Things that went poorly
- > Where we got lucky
- > Action items

Was noch?

- Microservice-Architektur
- Chaos Engineering
- Psychological Safety

Handley Page W.8, 1919



- 16 Passagiere
- 2 Piloten

Airbus A380, 2005



- 853 Passagiere
- 2 Piloten



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