Resources

Would you like to know more? This document provides links to the topics, tools, and resources we reference, as well as additional resources you may find useful as you get into more depth on particular subjects. DevOps is a huge area, so our approach in this course is to prepare you to be able to learn more about it on your own. Follow us on LinkedIn, we love to hear from you!

Chapter 1. DevOps Basics

Notes

DevOps consists of Values -> Principles -> Practices -> Tools

DevOps Values: CAMS

1. Culture
2. Automation
3. Measurement
4. Sharing

DevOps Principles: The Three Ways

1. Systems thinking
2. Amplify feedback loops
3. A culture of continuous experimentation and learning

The Five Practices of DevOps

1. Culture
2. Process
3. Infrastructure as code
4. Continuous delivery
5. Site reliability engineering

DevOps Tool Guidance

1. People over process over tools
2. KISS principle
3. Toolchain approach

Articles

"What Is DevOps" by Ernest Mueller

DevOps from Wikipedia

"What DevOps Means to Me" (CAMS) by John Willis

"DevOps Culture" by John Willis

"The Three Ways" by Gene Kim

"People over Process over Tools" by Alex Honor

KISS Principle from Wikipedia

DevOps Toolchain from Wikipedia

"The Amazing DevOps Transformation of the HP LaserJet Firmware Team" by Gene Kim

Frameworks

"adidas DevOps Maturity Framework" from adidas

"Operations Maturity Model" from Chef.io

Reports

Google's DevOps Research and Assessment Program

The State of DevOps Report

2023 | 2022 | 2021 | 2020 | 2019 | 2018 | 2017 and earlier

Chapter 2. DevOps and People: A Culture Change

Notes

Three Cs of a DevOps Culture

1. Communication
2. Collaboration
3. Continuous learning

Kaizen's Five Guiding Principles

1. Know the customer.
2. Enable smooth workflow.
3. Go to the real place (gemba).
4. Empower people.
5. Maintain transparency.

Articles

"10+ Deploys Per Day: Dev and Ops Cooperation at Flickr" by John Allspaw and Paul Hammond

"A Typology of Organisational Cultures" by Ron Westrum

"Conway's Law" by Melvin Conway

"Conway's Law" from Wikipedia

"DevOps Culture" by Martin Fowler

"What Is DevOps" by Damon Edwards

"Kaizen" from Wikipedia

"Kaizen Glossary" from the Kaizen Institute

Books

Crucial Conversations: Tools for Talking When Stakes Are High by Kerry Patterson, Joseph Grenny, Ron McMillan, and Al Switzler

Getting to Yes: Negotiating Agreements Without Giving In by Roger Fisher and William L. Ury

How to Say it At Work: Putting Yourself Across with Power Words, Phrases, Body Language, and Communication Secrets by Jack Griffin

How to Win Friends and Influence People by Dale Carnegie

*The No A**hole Rule: Building a Civilized Workplace and Surviving One That Isn't* by Robert I. Sutton

The 6 Types of Working Genius: A Better Way to Understand Your Gifts, Your Frustrations, and Your Team by Patrick Lencioni

Chapter 3. DevOps and Process: The Building Blocks

Notes

Three DevOps Process Building Blocks

1. Agile
2. Lean
3. Visible Ops change control

Seven Principles of Lean Software Development

1. Eliminate waste.
2. Amplify learning.
3. Decide as late as possible.
4. Deliver as fast as possible.
5. Empower the team.
6. Build quality in.
7. Optimize the whole.

Seven Wastes of Lean Software

1. Partially done work
2. Extra features
3. Relearning
4. Task switching
5. Waiting
6. Handoffs
7. Defects

Lean Performance Boosters

1. Work-in-process limits
2. Visual management
3. Monitoring systems to inform business decisions
4. Working in small batches
5. Visibility of work in the value stream
6. Customer feedback
7. Team experimentation

Courses

DevOps Foundations: Lean and Agile with Karthik Gaekwad and Ernest Mueller

IT Service Management Foundations: Change Management with Ernest Mueller

Articles

"Manifesto for Agile Software Development"

"Principles behind the Agile Manifesto"

"Lean Manufacturing" from Wikipedia

"Value-Stream Mapping" from Wikipedia

"ITIL" from Wikipedia

"ITSM" from Wikipedia

"The Andon Cord" by John Willis

Books

Lean Software Development: An Agile Toolkit by Mary Poppendieck and Tom Poppendieck

The Lean Startup: How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses by Eric Ries

Team Topologies: Organizing Business and Technology Teams for Fast Flow by Matthew Skelton and Manuel Pais

The Visible Ops Handbook: Implementing ITIL in 4 Practical and Auditable Steps by Gene Kim, Kevin Behr, and George Spafford

Presentations

"Agile Infrastructure" by Andrew Clay Shafer

Reports

"Annual State of Agile Report" from Digital.ai

Chapter 4. Infrastructure as Code

Notes

Three Areas of Configuration Management

1. Infrastructure provisioning
2. Application deployment
3. Service orchestration

Courses

DevOps Foundations: Infrastructure as Code with Ernest Mueller and James Wickett

Articles

"Infrastructure as Code" by Martin Fowler

" Provisioning" from Wikipedia

"Golden Image or Foil Ball" by Luke Kanies

"Immutable Delivery" by John Willis

"Immutable Server" by Kief Morris

Books

Infrastructure as Code: Dynamic Systems for the Cloud Age by Kief Morris

Tools and Services

Digital Rebar by RackN – bare metal infrastructure provisioning

AWS CloudFormation – AWS cloud infrastructure provisioning from a template

Azure Resource Manager – Azure cloud infrastructure provisioning from a template

Boto – Python library for AWS infrastructure provisioning from code

Amazon Cloud Development Kit (CDK) – AWS library for infrastructure provisioning from code

Bicep – Azure library for infrastructure provisioning from a DSL

Terraform by HashiCorp – multicloud platform for infrastructure provisioning from a DSL

Pulumi – multicloud platform for infrastructure provisioning from code

Chef by Progress – tool for declarative system level configuration management

Puppet by Perforce – tool for declarative system level configuration management

Cfengine – tool for declarative system level configuration management

Ansible – tool for imperative configuration management

Salt Project – tool for imperative configuration management

Packer by HashiCorp – tool for baking virtual images for deployment

Docker – container development tool

Kubernetes – container orchestration platform

Apache Mesos – container orchestration platform

Rundeck by PagerDuty – runbook automation platform

StackStorm – runbook automation platform

Apache Airflow – runbook automation platform

System Initiative – cutting-edge digital twin-based reimagining of config management

Chapter 5. Continuous Delivery

Notes

Three Stages of Software Development

1. Build and test code.
2. Deploy and test software.
3. Release software or service.

Six Practices for Continuous Integration

1. Fast builds (pass the coffee test)
2. Commit small changes (one is best).
3. Don't leave the build broken.
4. Use a trunk-based development flow.
5. Don't allow flaky tests, fix them!
6. The build should return a status, a log, and an artifact.

Five Practices for Continuous Delivery

1. Build artifacts only once.
2. Artifacts should be immutable.
3. Deploy to a production-like environment.
4. Stop deploys if a previous step fails.
5. Deploys should be idempotent.

Four Types of Automated Testing

1. Unit testing
2. Code hygiene testing (linting)
3. Integration testing
4. Acceptance (end-to-end) testing

Your CI Toolchain

1. Version control
2. Build system
3. Testing
4. Artifact repository
5. Deployment

Courses

DevOps Foundations: Continuous Delivery/Continuous Integration with Ernest Mueller and James Wickett

DevSecOps: Building a Secure Continuous Delivery Pipeline with James Wickett

DevSecOps: Automated Security Testing with James Wickett

Articles

"Test Automation" from DORA.dev

"Blue-Green Deployment" by Martin Fowler

"Canary Release" by Martin Fowler

"Write tests. Not too many. Mostly integration." by Kent Dodds

Books

Continuous Delivery by Jez Humble and David Farley

Tools and Services

Tool discovery trick: Google one of these names using "vs" and you'll get suggestions of that tool versus other tools in its space other people are asking about.

Version Control

Bitbucket

Git

GitHub

GitLab

Perforce

Plastic SCM

Build System

Azure DevOps Server

Bamboo

CircleCI

GoCD

Jenkins

TeamCity

Travis CI

Build Tools

fpm

gulp

Make

Maven

Packer

Rake

Testing

ApacheBench

ChefSpec

Cucumber

Cypress

Dependabot

ESLint

FindBugs

Foodcritic

Gauntlt

go test

gofmt

Golint

InSpec

JMeter

JUnit

KitchenCI

LoadRunner

Postman

Protractor

pytest

Robot Framework

RSpec

RuboCop

Sauce Labs

Selenium

Staticcheck

TestNG

Artifact Repositories

Amazon S3

Docker Hub

JFrog Artifactory

Sonatype Nexus

Deployment

Argo

Deployinator

Harness

Octopus Deploy

Rundeck

Spinnaker

Chapter 6. Site Reliability Engineering

Notes

Five Areas of Observability

1. Synthetic checks
2. System and application metrics
3. End user performance
4. System and application logs
5. Security monitoring

Three Activities of Incident Response

1. Troubleshooting
2. Automation
3. Communication

Incident Management Process Areas

1. Detection
2. Reporting
3. First response
4. Escalation
5. Coordination
6. Communication
7. Diagnosis
8. Repair

Effective Postmortem Principles

1. Root cause is a myth.
2. Postmortems should be blameless.
3. Ensure transparent communication.

Your SRE Toolchain

1. Build for reliability
2. Operational feedback
    a. Observability
    b. Incident response
    c. Transparent uptime

Courses

DevOps Foundations: Site Reliability Engineering with Ernest Mueller and James Wickett

DevOps Foundations: Monitoring and Observability with Peco Karayanev and Ernest Mueller

DevOps Foundations: Incident Management with Ernest Mueller

DevOps Foundations: Effective Postmortems with Ernest Mueller

Articles

"A Guideline for Postmortem Communication" by Lenny Rachitsky

Architecture Descriptions by Martin Fowler

"AWS Outage: How Netflix Weathered the Storm by Preparing for the Worst" by Nick Heath

"Blameless Postmortems and a Just Culture" by John Allspaw

"Code profiling" from Wikipedia

"Dependency Injection" by Martin Fowler

"DevOps Areas: Codifying DevOps Practices" by Patrick Debois

"Frequency Reduces Difficulty" by Martin Fowler

"How Complex Systems Fail" by Richard Cook, MD

"How Distributed Systems Fail" by Roberto Vitillo

"Keys to SRE" by Ben Treynor

"Reliability Engineering" from Wikipedia

"Resilience Engineering" by Erik Hollnagel

"The Art of Building Fault-Tolerant Software Systems" by Code Reliant

"The Twelve-Factor App" by Adam Wiggins

"Transparent Uptime" by Lenny Rachitsky

Books

Design Patterns: Elements of Reusable Object-Oriented Software by Erich Gamma, Richard Helm, Ralph Johnson, John Vlissides

Logging and Log Management by Anton Chuvakin, Kevin Schmidt, and Chris Phillips

Release It!: Design and Deploy Production-Ready Software by Michael Nygard

Site Reliability Engineering: How Google Runs Production Systems, edited by Betsy Beyer, Chris Jones, Jennifer Petoff, Niall Richard Murphy

Site Reliability Engineering (free online version), edited by Betsy Beyer, Chris Jones, Jennifer Petoff, Niall Richard Murphy

The Site Reliability Workbook (free online version), edited by Betsy Beyer, Niall Richard Murphy, David K. Rensin, Kent Kawahara, and Stephen Thorne

Building Secure & Reliable Systems (free online version) by Heather Adkins, Betsy Beyer, Paul Blankinship, Piotr Lewandowski, Ana Oprea, and Adam Stubblefield

Presentations

"A Lean Cloud Monitoring Checklist" by Ernest Mueller

"Incident Command for IT: What We Can Learn from the Fire Department" by Brent Chapman

Tools and Services

OpenAPM Tool Landscape

Observability

AppDynamics
Amazon CloudWatch
Azure Monitor
Catchpoint
Datadog
Dynatrace
ELK Stack
Grafana
Graphite
Graylog
Honeycomb
Icinga
Lens/OpenLens
LogicMonitor
Nagios
New Relic
Observe
OpenTelemetry
Prometheus
Pingdom
SigNoz
Sumo Logic
Sysdig
Sensu
SpeedCurve
Splunk
Stackify
D
TICK stack
Uptrace
Zabbix

Incident Response

Blameless
Incident.io
Jeli
Opsgenie
PagerDuty
Rootly
Splunk On-Call
(formerly VictorOps)

Runbook Automation

Red Hat Ansible
Automation Platform
(formerly Ansible Tower)
Rerun
Rundeck by PagerDuty
Salt Project
(formerly Saltstack)

Transparent Uptime

Cachet
Statuspage
Status.io
Staytus
Upptime

Building Reliability In

Apache Logging
Metrics
Resilience4j

Chapter 7. Advanced Topics

Books

Agile Application Security: Enabling Security in a Continuous Delivery Pipeline by Laura Bell, Michael Brunton-Spall, Rich Smith, Jim Bird

Chaos Engineering by Casey Rosenthal and Nora Jones

Production Kubernetes: Building Successful Application Platforms by Josh Rosso, Rich Lander, Alex Brand, John Harris

Programming Kubernetes: Developing Cloud-Native Applications by Michael Hausenblas and Stefan Schimanski

Articles

"How We Build Code at Netflix" by Ed Bukoski, Brian Moyles, and Mike McGarr

Courses

DevSecOps: Automated Security Testing with James Wickett

DevSecOps: Building a Secure Continuous Delivery Pipeline with James Wickett

DevSecOps: Burning Questions with James Wickett

DevSecOps: Tips for Success with James Wickett

MLOps Essentials: Model Deployment and Monitoring with Kumaran Ponnambalam

MLOps Essentials: Model Development and Integration withy Kumaran Ponnambalam

Videos

Can Generative DevOps Empower 10x Operators by Rob Hirschfeld

Blogs, Groups, and Social Media

Absolute AppSec podcast

Platform Engineering Community

Cloud Native Operational Excellence from AWS, Autodesk, Twilio, and Salesforce

Reports

The DevOps Audit Defense Toolkit from IT Revolution Press

Dear Auditor from IT Revolution Press

An Unlikely Union: Devops and Audit from IT Revolution Press

DevSecOps Community Survey 2019 from Sonatype

Contextual Security Analysis Guide from DryRun Security

Tools and Services

Amazon CodeWhisperer – AI code assistance

Chaos Mesh – open-source chaos engineering suite for Kubernetes

Chaos Monkey – open-source chaos engineering tool from Netflix

Chaos Toolkit – open-source chaos engineering suite

Cloud Native Computing Foundation – Kubernetes-related ecosystem

Dependabot – code dependency checker

DryRun Security – AI Security Buddy

Harness Chaos Engineering – commercial version of LitmusChaos

Gauntlt – security CI testing

GitHub Copilot – commercial AI code assistance

Gremlin – Chaos Engineering service

k8sGPT – AI tool to explain your Kubernetes cluster to you

Kubernetes – container orchestration

LitmusChaos – open-source Chaos Engineering suite

Platform tooling landscape

Chapter 8. Your DevOps Career

Books

- *The DevOps Handbook: How to Create World-Class Agility, Reliability, and Security in Technology Organizations* by Gene Kim, Jez Humble, Patrick Debois, and John Willis
- *Accelerate: The Science of Lean Software and DevOps: Building and Scaling High Performing Technology Organizations* by Nicole Forsgren, Jez Humble, Gene Kim
- *The Phoenix Project: A Novel about IT, DevOps, and Helping Your Business Win* by Gene Kim, Kevin Behr, George Spafford
    a. And their sequel, *The Unicorn Project: A Novel about Developers, Digital Disruption, and Thriving in the Age of Data*
- *Continuous Delivery: Reliable Software Releases through Build, Test, Deployment Automation* by Jez Humble and David Farley
- *Site Reliability Engineering: How Google Runs Production Systems*. edited by Betsy Beyer, Chris Jones, Jennifer Petoff, Niall Richard Murphy
    b. Also *Site Reliability Engineering* (free online version)
- *Infrastructure as Code: Dynamic Systems for the Cloud Age* by Kief Morris

- *Release It!: Design and Deploy Production-Ready Software* by Michael Nygard
- *The Practice of Cloud System Administration, DevOps and SRE Practices for Web Services*, volume 2, by Christine Hogan, Strata R. Chalup, and Thomas A. Limoncelli
    c. But don't miss *Practice of System and Network Administration, The: DevOps and Other Best Practices for Enterprise IT*, Volume 1
- *The Visible Ops Handbook: Implementing ITIL in 4 Practical and Auditable Steps* by Gene Kim, Kevin Behr, and George Spafford
- *Lean Software Development: An Agile Toolkit* by Mary Poppendieck and Tom Poppendieck

Bonus Books

Web Operations: Keeping the Data On Time by John Allspaw and Jesse Robbins, the first proto-DevOps book published as a series of essays

Leading the Transformation: Applying Agile and DevOps Principles at Scale by Gary Gruver and Tommy Mouser, detailing the transformation of the HP LaserJet driver team to DevOps

Blogs, Mailing Lists, Websites, and Social Media

1. DevOps Weekly by Gareth Rushgrove (archive)
2. Monitoring Weekly by Jason Dixon
3. SRE Weekly by Lex Neva
4. DevOps Bulletin by Mohamed Labouardy
5. Martin Fowler
6. Wizard Zines by Julia Evans, especially the comics!

Bonus Sites

The Agile Admin by Ernest Mueller, James Wickett, Peco Karayanev, and Karthik Gaekwad

DevOps.com (@devopsdotcom) Chief Editor: Alan Shimel

DZone

InfoQ

IT Revolution Press by Gene Kim (and others)

Conferences

All Day DevOps

AWS re:Invent

DevOpsDays

DevOps Enterprise Summit (DOES)

Courses

Culture

DevOps for Managers with Ernest Mueller and James Wickett

DevOps Antipatterns with Ernest Mueller and James Wickett

Process

DevOps Foundations: Lean and Agile with Karthik Gaekwad and Ernest Mueller

IT Service Management Foundations: Change Management with Ernest Mueller

Infrastructure as Code

DevOps Foundations: Infrastructure as Code with Ernest Mueller and James Wickett

Continuous Delivery

DevOps Foundations: Continuous Delivery/Continuous Integration with Ernest Mueller and James Wickett

DevSecOps: Building a Secure Continuous Delivery Pipeline with James Wickett

DevSecOps: Automated Security Testing with James Wickett

Site Reliability Engineering

DevOps Foundations: Site Reliability Engineering with Ernest Mueller and James Wickett

DevOps Foundations: Monitoring and Observability with Peco Karayanev and Ernest Mueller

DevOps Foundations: Incident Management with Ernest Mueller

DevOps Foundations: Effective Postmortems with Ernest Mueller