

No. 91

SOFTWARE DELIVERY

DevOps and Platform Engineering

Ship software faster and more safely with DevOps practices and internal developer platforms, explained for beginners

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BEFORE YOU BEGIN

How to use this book

What this book covers, who it is for, and how to use it.

DevOps is a way of building and running software where development and operations work together, automate as much as possible and release small changes often. **Platform engineering** is its newer companion: building an **internal developer platform** that gives teams self-service tools and paved "golden paths" so they can ship safely without reinventing infrastructure each time.

Both are among the rising technology topics in long-term search trends, and both have become mainstream. Google's 2025 DORA research found that 90% of organizations had adopted platform engineering, and that a high-quality internal platform is a foundation for getting value from AI.

This book explains DevOps and platform engineering for beginners: the culture, the metrics, the core practices from version control to Kubernetes, how platforms work, and how security, cost and AI fit in.

What this book covers

- DevOps principles and the DORA metrics.
- Continuous integration and delivery, infrastructure as code, containers, Kubernetes and GitOps.
- Observability and site reliability engineering.
- Internal developer platforms, golden paths and developer portals such as Backstage.
- DevSecOps, FinOps and AI in software delivery.

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Who this book is for

- **Developers and IT staff** new to DevOps.
- **Managers** leading delivery improvements.
- **Students** exploring cloud and DevOps careers.

How the book is organized

- **Part I — Foundations** (Chapters 1–5): what DevOps is, its history, the life-cycle, measuring delivery, and what platform engineering adds.
- **Part II — Core practices** (Chapters 6–13): version control, CI, CD and de-ployment, infrastructure as code, containers, Kubernetes, GitOps, and observ-ability and SRE.
- **Part III — Platform engineering** (Chapters 14–18): internal developer plat-forms, golden paths, developer portals, platform as a product, and team structures.
- **Part IV — Security, cost and AI** (Chapters 19–23): DevSecOps, FinOps, AI in software delivery, getting started, and careers.
- **Reference**: checklists, glossary and further reading.

Callouts

TIP

Practical advice you can use straight away.

IN PRACTICE

How a practice looks with real tools.

WATCH OUT

Common mistakes and risks.

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KEY IDEA

The one thing to remember from a section.

A note on code and screens

Configuration examples are short and illustrative; check each tool's documentation before production use. Screens are **simplified illustrations**.

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PART I

Foundations

These chapters explain what DevOps is, where it came from, the delivery lifecycle, how to measure delivery performance, and what platform engineering adds.

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CHAPTER 1

What DevOps is

DevOps is a culture and set of practices for delivering software quickly and reliably.

Breaking down the wall



Figure 1.1 From silos to shared ownership

Traditionally, developers wanted to change things quickly, and operations teams wanted stability. DevOps aligns both around a shared goal: delivering value to users quickly **and** safely.

Not a tool or a job title

DevOps is mainly a **way of working**. Tools help, but buying tools without changing habits rarely helps.

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CALMS

Pillar	Meaning
Culture	collaboration and shared responsibility
Automation	machines do repetitive work
Lean	small batches, less waste
Measurement	decide with data
Sharing	knowledge and tools flow freely

Figure 1.2 Five pillars

Core ideas

- **Small batches**: small changes are easier to test and roll back.
- **Automation**: builds, tests, deployments and infrastructure.
- **Fast feedback**: know quickly when something breaks.
- **Blameless learning**: improve systems, not blame people.

> **KEY IDEA**
> DevOps makes delivering change routine and boring, which is exactly what you want.

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CHAPTER 2

A short history

DevOps grew from frustration with slow, risky releases.

Agile and the operations gap

In the 2000s, **agile** methods helped developers work in short iterations, but releases still often went to operations teams in big, infrequent batches.

The birth of DevOps

In 2009 Patrick Debois organized the first **DevOpsDays** conference in Ghent, Belgium, and the term spread quickly. Influential books such as *The Phoenix Project*, *The DevOps Handbook* and *Accelerate* followed.

DORA research

The **DevOps Research and Assessment (DORA)** program, now part of Google Cloud, has surveyed tens of thousands of professionals since 2014, linking practices to measurable outcomes.

Cloud native and platforms

Cloud computing, containers and Kubernetes changed how software runs. As tooling multiplied, platform engineering emerged to reduce the load on developers.

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