# Achieving Control and Velocity in Production

*The Power of Combining CI/CD and Feature Flags*

Engineering teams are constantly trying to deliver software faster and without introducing more risk. Software delivery pipelines play an important role in this effort — most notably with continuous integration and deployment (CI/CD). However, as developers push the boundaries of CI/CD, they're running into problems at the deployment end of the process stemming from a lack of control in production. That's where feature management (also known as feature flags) comes in.

## The Limitations of CI/CD

### Before Deployment

- Deployments get larger, compounding risk and lengthening the deployment process.
- Deployments are bottlenecked by individual changes that are not ready.
- Targeting specific user sets requires manually maintaining app configs, DB flags, or environment variables.
- Multiple "versions" or long-lived source control branches for different feature set requirements from customers cause massive merge conflicts.

### After Deployment

- A single issue means the entire deployment must be rolled back.
- Controlling customer access is difficult, and permissions must be created manually.
- There's little to no visibility into how a deployment is performing compared to expectations.
- Real-world input can create unexpected failures (e.g. load testing) and requires rework, or even a full deployment rollback.

> **Harness Feature Flags has enabled us to implement true CI/CD. We're shortening our commit-to-production time by 3x, releasing features to customers faster and more safely than we could before.**
>
> **Sam Hall**
> Head of Technology
> Metrikus

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## The Role of Feature Flags

### Before Deployment — Velocity to Production

There tends to be diminishing returns on velocity with CI/CD as deployments get larger and thus riskier. Here's how feature flags can help:

- **Deploy in smaller chunks**
  By deploying smaller releases more often, you deliver faster and with less risk per deployment.

- **Deploy without release**
  Push code into production behind a flag to test features before rolling them out to all users.

- **Relieve the engineering bottleneck**
  Feature flags free up engineering bandwidth by eliminating manual changes, which is also a boon for customers who get new features sooner.

- **Faster, more frequent feedback**
  While it might seem like adding more feedback points would slow down the process, in practice, it turns out it's faster.

### After Deployment — Control in Production

Maintaining control of new changes and features once they're deployed is vital for both developers and DevOps teams. Here's why:

- **A first line of defense**
  If something goes wrong, it is handled at the feature level. No more rollbacks of monolithic deployments because of one bad feature.

- **Simplify feature access control for customers**
  Instead of a runtime config, granularly define the set of users that gets access to individual features.

- **Decouple deployment from release**
  Deploy everything in an "off" state, providing the flexibility to choose when a feature goes live for customers — and exactly who gets access to it.

- **Maintain developers' focus by empowering non-developer teams**
  Give control to customer-facing teams, so they can manage the customer experience, letting engineers focus on development.

# Truly Unified CI/CD With Feature Flags

Feature flag implementations that are disconnected from CI/CD introduce unnecessary risk and a gap in metrics, audit logs, governance, and security.

Harness Feature Flags and Harness CI/CD provide the common enterprise thread required to achieve control over software delivery.

## Users benefit from:

- End-to-end control and visibility from build to deploy and release
- Automated governance with Harness Policy as Code
- A consistent, modern developer experience across all stages of software delivery
- Machine learning that speeds up testing to auto-verify deployments

Harness meets you at each stage of your software delivery lifecycle.
If you're ready to see how, you can sign up for free or reach out to us for a personalized demo.