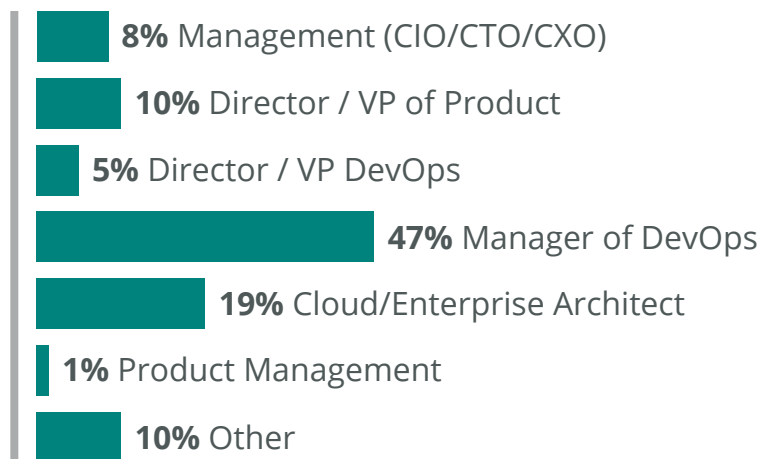# THE STATE OF SOFTWARE DELIVERY REPORT 2019
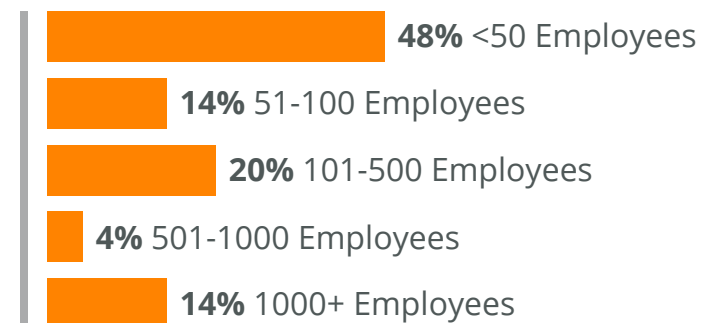
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SURVEY GOALS

This survey explores the state of software delivery for companies across multiple industries. It evaluates a variety of topics starting with the importance of software development and delivery for enterprises. It looks at how software is being deployed today vs. what is planned and the main goals with regards to software delivery for organizations today. It goes on to examine the importance of open source technology, the use of a variety of container orchestration platforms, and the stage organizations are at in evaluating continuous integration (CI) and continuous delivery (CD) tools. Other items evaluated are the frequency of software releases and whether organizations have a CI and a CD strategy in place.

SURVEY RESPONDENT OVERVIEW

Survey Demographics

- **8%** Management (CIO/CTO/CXO)
- **10%** Director / VP of Product
- **5%** Director / VP DevOps
- **47%** Manager of DevOps
- **19%** Cloud/Enterprise Architect
- **1%** Product Management
- **10%** Other

Company Size

- **48%** <50 Employees
- **14%** 51-100 Employees
- **20%** 101-500 Employees
- **4%** 501-1000 Employees
- **14%** 1000+ Employees

INTRODUCTION

Early this year, Armory conducted a survey to assess the state of software delivery and software development lifecycle (SDLC) for companies across multiple industries.

We wanted to know:

- How are organizations delivering software today?

- What approaches and tools do they plan to use to deliver software tomorrow, and beyond?

- What challenges and trends are driving those decisions?

The key findings surfaced by the survey closely mirror the industry drivers we've identified in recent years:

1. Rapid, flexible, and reliable software delivery is a key competitive differentiator.

2. Current tooling & deployment environments are not sufficient to support this type of software delivery.

3. It is critical to embrace CI/CD, especially with the move to cloud and hybrid platforms.

Dive deep with Armory as we look at the state of software delivery, take a closer look at software delivery challenges faced by organizations, and explore how an open source platform like Spinnaker can address many of these challenges in a move towards CI/CD.

REPORT CONTENTS

SOFTWARE DELIVERY: WHY IT IS SO IMPORTANT TO 'GET IT RIGHT'

Organizations across a spectrum of industries are increasingly leveraging software as a core competitive differentiator. This means that the ability to deploy software faster, more efficiently, and more reliably has never been more critical in order to maximize both organizational resources and innovation.

91% agree that software development and delivery is critical to success

60% are focused on increasing software quality

75% agree that increased velocity, reduced complexity, and reduced operational overhead are key goals

ORGANIZATIONS FACE SOFTWARE DELIVERY CHALLENGES

Several challenges make it difficult for organizations to deliver software in an efficient, reliable way. Unless these challenges are overcome, innovation and delivery will be impeded, and so will an organization's ability to remain competitive.

The top software delivery challenges identified are:

- Manual, error-prone processes.
- Migrating deployment environments & pipelines to the cloud.
- Complex tooling.

These challenges underscore why it's never been more important to consider automation and modernization of SDLC approaches and technologies. Over the next few pages, we'll take a look at each of these in more detail.
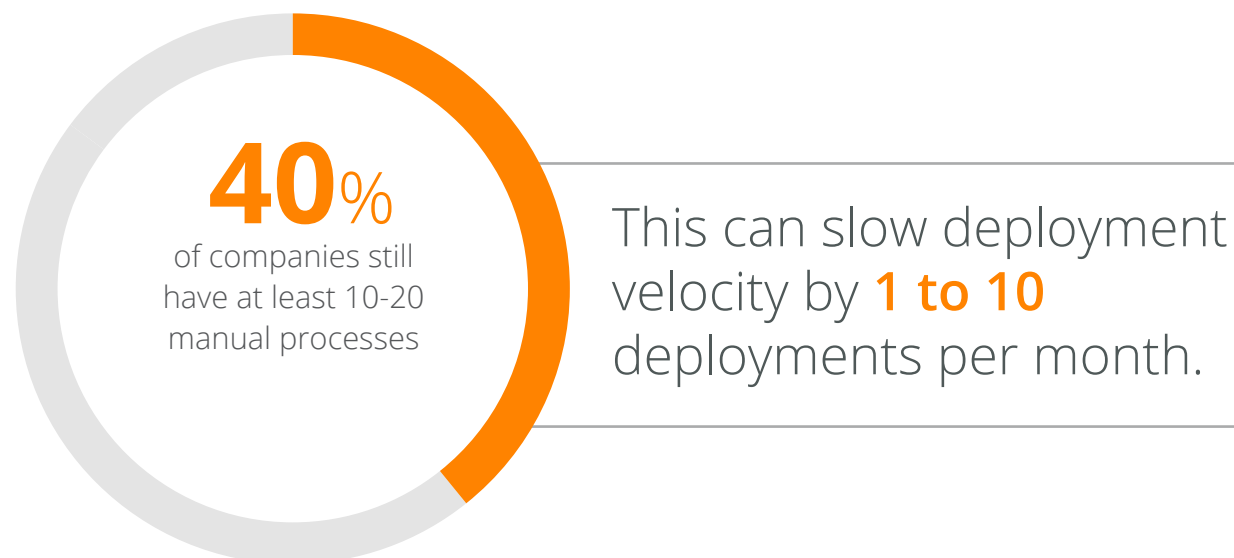
CHALLENGE 1: MANUAL PROCESSES

Deploying software to the cloud – whether public, private, or hybrid – is critical for delivering innovation rapidly and at scale. However, using legacy manual processes to deliver software to multiple deployment targets presents numerous challenges to businesses.

Manual processes are:

- Resource intensive
- Error-prone
- Time-consuming

In combination, these issues dramatically slow delivery velocity, lead to inflexible and difficult-to-maintain processes, and can cause outages.

40% of companies still have at least 10-20 manual processes

This can slow deployment velocity by **1 to 10** deployments per month.

CHALLENGE 2: MIGRATING PIPELINES TO THE CLOUD

Enterprises are moving to the cloud, and their deployment pipelines are moving with them.

While there are clear benefits to moving to the cloud, there are also inherent migration challenges. Rebuilding deployment pipelines when transitioning from bare metal to diverse cloud deployment targets introduces complexity and new processes. This creates a massive constraint on DevOps resources that slows time-to-market and innovation.
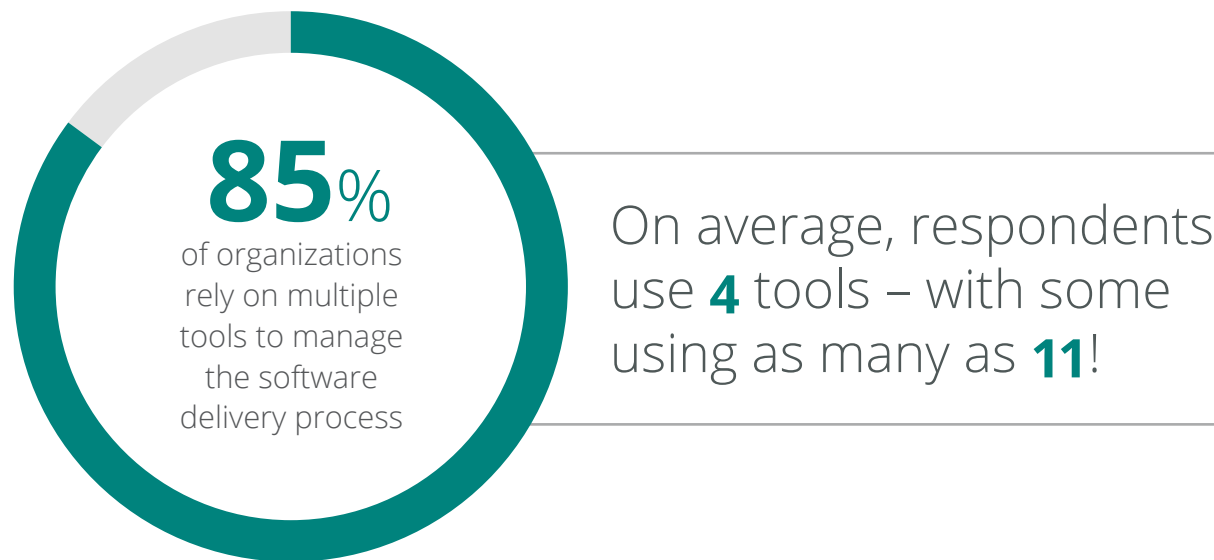
94% of enterprises are deploying to either the cloud, multi-cloud environments or hybrid environments

75% of organizations cite deployment complexity as a critical limiting factor to software innovation

CHALLENGE 3: THE VAST TOOLING ECOSYSTEM INTRODUCES COMPLEXITY

There is a vast ecosystem of development and deployment tooling for organizations to choose from. And, most companies use multiple tools simultaneously. The result is DevOps complexity, with engineers spending too much time on DevOps processes rather than on delivering competitive software – or focusing on innovation.

85% of organizations rely on multiple tools to manage the software delivery process

On average, respondents use **4** tools – with some using as many as **11**!

THE ADOPTION OF OPEN SOURCE IS A POSITIVE DEVELOPMENT

But it's not all doom and gloom...

There has been a trend in recent years towards embracing open source technologies. This enables organizations to 'unlock' themselves from a single vendor and benefit from the innovations offered by vibrant, passionate open source communities.

Just as the majority of respondents are moving to cloud or hybrid environments, the vast majority – 90% – are already moving towards, or are committed to moving towards, open source technologies.

90% are already moving towards, or are committed to moving towards, open source technologies

COMPANIES ARE ALREADY ADOPTING CI/CD

There is great value in delivering software to customers reliably and quickly. Organizations are clearly recognizing that value:

68% of respondents have a CI strategy in production

46% of respondents have a CD strategy in production

CI/CD is an approach to software delivery with a set of best practices for releasing software with higher velocity and confidence.

CI provides an integrated software delivery framework that is consistent and accessible.

CD provides for automated testing and deployment of code.

CONTINUOUS DEPLOYMENT IS HAPPENING … SLOWLY!

The move to CI/CD can be viewed within the context of the 'Stages of Software Delivery Evolution.' Armory developed this diagram to visualize the progress from Data Center Deployments (traditional, manual, error-prone deployments), through the maturity model to complete CI/CD. Fully-automated software delivery is aspirational: it's a nirvana, or ideal state that few companies (such as Netflix) have actually achieved.

DATA CENTER DEPLOYMENTS	HYBRID CLOUD ADOPTION	MULTI-CLOUD GOLDEN PATH TO PROD	CONTINUOUS DELIVERY ADOPTION	SOFTWARE DELIVERY AUTOMATION
Bare Metal or VMs	Data Centers + Lift & Shift	Kubernetes in Data Centers	Deploy Continuously in Background	Automated Canaries
Mutable Deployments	No Standard Path to Prod	Pipelines as Code	Full Embrace of DevOps Culture	Automated Rollbacks
SSH into Prod	No Global Compliance	Global Compliance Policies	Monolith Apps into Microservices	Machine Learning Powered Anomaly Detection
Deployments = Events	Complicated Rollbacks	Dedicated DevOps	App Teams Fully Self-Service	SLA Transparency on Per-App Basis
Manual & Error Prone	No Service Ownership	Immutable Deploys	All Teams Deploy with Same Platform	Chaos Engineering
Dev vs. Ops	Inconsistent Deploys	Confident Rollbacks	Manual Canaries	Automated Dependency Analysis
	SLA Failures	Manual Judgements		Feature Flagging
		Strong Integration Test Coverage		Value Stream Map
				Developer Analytics
Frequent Outages	Some Outages	Few Outages	Minimal Outages	Rare Outages
20+ Manual Steps	10+ Manual Steps	1 to 3 Manual Steps	0 Manual Steps	0 Manual Steps
Weeks/Months to Deploy	Days/Weeks to Deploy	Hours to Deploy	Minutes to Deploy	Minutes to Deploy
1-2 Deployments/Month	2-10 Deployments/Month	10-20 Deployments/Month	100+ Deployments/Month	1000+ Deployments/Month
Late Majority	Early Majority	Early Adopters	Early Adopters	Innovators

Respondents are at various stages of the Software Delivery Evolution continuum.

40% ·············

36% ·············

24% ·············

5% ·············

WHAT IS SPINNAKER, AND HOW CAN IT SOLVE THESE CHALLENGES?

With companies moving towards open source, adopting CI/CD, and recognizing that a focus on SDLC is a critical competitive differentiator, more organizations are evaluating Spinnaker's place in the ecosystem.

40% of survey respondents are already evaluating Spinnaker

Armory has a simple Blueprint to help organizations migrate from manual deployments to CI/CD with Spinnaker.

WHAT IS SPINNAKER?

Spinnaker is an open source, multi-cloud, continuous delivery platform that helps companies release software changes with high velocity and confidence.

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SCHEDULE A PROOF OF CONCEPT TODAY

About Armory

Armory provides an enterprise-scale, software delivery platform — powered by Spinnaker, a multi cloud-native continuous delivery & infrastructure management platform. Created at Netflix and used by the world's biggest brands, Spinnaker has been battle-tested in production by hundreds of teams over millions of deployments. Backed by Crosslink Capital, Bain Capital Ventures, YCombinator, and others, Armory is headquartered in San Mateo, CA.