



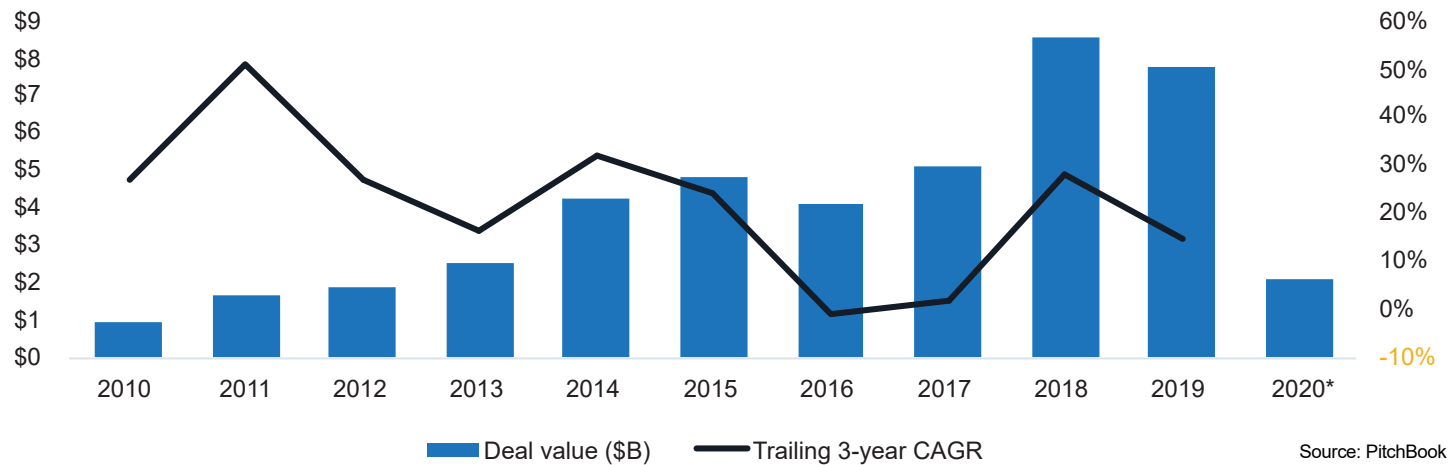
DELLTechnologies CAPITAL

Venture Investment Driving Emergence of Developer-led Enterprise Software

Data provided by  PitchBook®

DevOps investment nearing \$10B annually

Global VC investment in DevOps



Demand for digital services from consumers continues to outstrip our ability to create new ones. This dynamic has already driven over \$43 billion of venture capital (VC) into DevOps across almost 4,000 funding rounds since the start of 2010. As a result, DevOps technologies have become a fundamental pillar of the enterprise tech stack alongside data, infrastructure, and apps. VC-driven DevOps deals have expanded at a 27% compounded rate over the past decade, with volume increasing 11%.

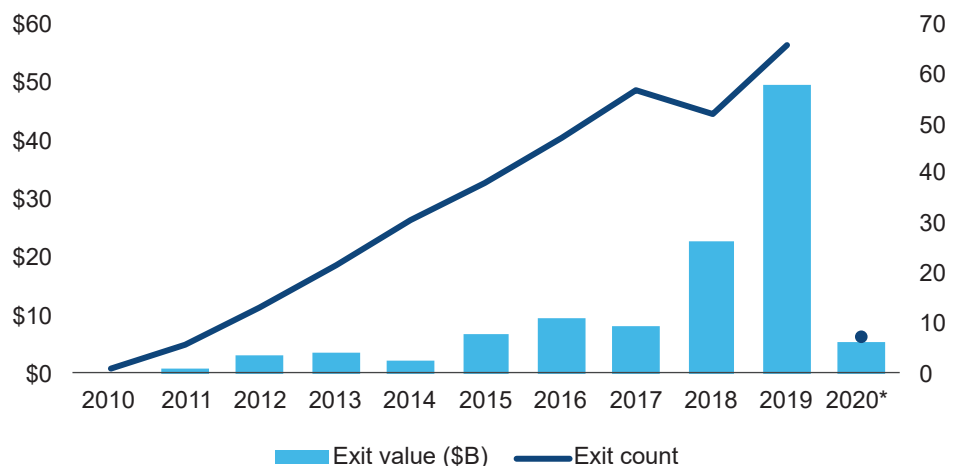
of every three funding rounds closed and attracted 84% of VC invested in DevOps.

With DevOps entering its tenth year, many DevOps companies are maturing to Series D, with later DevOps companies securing 79% of total funding. DevOps deal value is now on par with cybersecurity at roughly two-thirds the transaction volume.

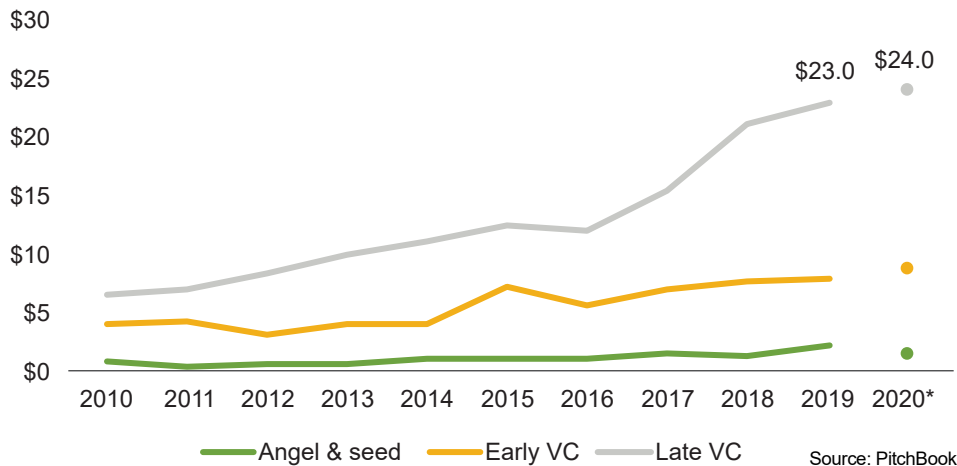
Several successful debuts in recent years, including PagerDuty's IPO, with an initial market cap of nearly \$1.8 billion, have demonstrated to investors that vendors can become strong performers in the public markets. Since the start of 2010, IPO activity has generated over \$71 billion in exit value—\$30 billion more than M&A in aggregate. However, **at nearly 10x the frequency, strategic acquisition has driven the**

Cloud migration, automation and developer productivity are driving significant investor attention to the DevOps space in recent years. **The need for reactive, cloud-native application architecture and the "shift left" of operations, networking, and security into development are key drivers.** HashiCorp's latest round valued the cloud infrastructure company at a \$5.1 billion pre-money valuation. GitHub was acquired by Microsoft for \$7.5 billion, even though Microsoft had an extensive portfolio of developer products built over four decades. Microsoft's actions triggered investor interest in GitLab, driving its most recent round to a \$2.8 billion valuation. In 2019, US-based vendors secured two

Global VC exit activity in DevOps



Median global VC deal sizes (\$M) in DevOps by stage



steady development of exit routes for investors in DevOps. The acquisitions of GitHub and RedHat illustrate the importance of the open-source ecosystem to incumbents as they target opportunities to stay competitive. In 2019, exit activity in DevOps reached a record \$49.6 billion across 66 transactions. With demand for digital services as strong as ever, further funding will fuel more consolidation to support the automation and industrialization of DevOps over the coming decade.

Notable players in DevOps

NS1.

VC raised: \$84.8M
Redefining the Internet's foundation to intelligently steer traffic



VC raised: \$413.8M
DevOps platform built with open-source version control



VC raised: \$146M
World's fastest NoSQL database powering cloud native apps



VC raised: \$127.1
Reactive architecture for building scalable cloud native apps



VC raised: \$12.5M
Open-source network and security agility for Kubernetes



VC raised: \$349.5M
Open-source building blocks for cloud native developers



VC raised: \$0
Building the tools loved by the world's best developers



VC raised: \$3.5M
An edge developer platform that places apps next to users



Founded: 2008
Founders: Shlomi Ben Haim (pictured), Yoav Landman, Fred Simon
VC raised: \$228M
Funding rounds: 5

"Imagine our world if software updates failed, our lives would grind to halt! DevOps, as an extension of Developers, enables Digital Transformation; but it will not be realized without continuous and secure deployment at the endpoint. Therefore, the future of DevOps will be focused on getting software packages to the edges. JFrog's vision is to power a world of continuously updated, version-less software focused on packages (a.k.a binaries) of all types. We call it Liquid Software, which can be achieved by JFrog's hybrid, end-to-end DevOps platform."

Shlomi Ben Haim, Co-Founder and CEO, JFrog

Q&A: Dell Technologies Capital Managing Director Tyler Jewell



Tyler Jewell is Managing Director at Dell Technologies Capital. Tyler's responsibilities include sourcing, leading and managing investments in cloud infrastructure, DevOps, and analytics. He is on the board of NS1, Lightbend, and Orion Labs. He is based in Palo Alto, California.

Prior to joining Dell Technologies, Tyler was CEO of WSO2, the largest open-source integration provider, and founder/CEO of Codenvy (acquired by Red Hat). While operating as a CEO, Tyler was also an angel and partner at Toba Capital where he led \$100 million in DevOps investments including Cloudant (acquired by IBM), Sauce Labs, Sourcegraph, InfoQ, and ZeroTurnaround (acquired by Roguwave).

Before Toba Capital, Tyler spent 15 years in product leadership roles at Oracle (Oracle Cloud), Quest Software (Foglight, Spotlight, JProbe, Performasure acquired by Dell Technologies), MySQL (acquired by Oracle), Veritas (TheServerSide.com acquired by TechTarget), and BEA (WebLogic acquired by Oracle). He has more than 50 publications and is the author of three books on Java.

Tyler holds a BS in computer science from Rose-Hulman Institute of Technology.

How has the investment landscape in DevOps changed over the course of your career?

I made my first DevOps investment in 2005, an angel investment into InfoQ. The market for selling to developers was just emerging. Developers were not a part of standard corporate procurement processes. These factors made for a choppy market and modest interest from investors.

In 2020, DevOps initiatives exist in more than 50% of organizations employing 22 million developers. The market is now mature and a reliable source of sales. DevOps is considered essential developer infrastructure for every software project. With most companies making software a core competency, the number of professional developers will continue to rise. Along with the rise of the developer population comes a growing DevOps budget.

How has your DevOps investment thesis evolved?

The original thesis was that consumer demand for digital services would outstrip the supply of engineers to build them, creating opportunities for vendors who could improve developer

productivity. This thesis proved true as the DevOps market grew from \$900 million in VC raised in 2010 to \$7.7 billion in 2020. DTC has seen this firsthand with the developer-driven growth we witnessed in our portfolio companies MongoDB, Redis Labs, Packet, and JFrog.

I believe the next wave in DevOps will be the move toward more autonomous software development.

Software systems are more complicated due to tool and programming language fragmentation, API sprawl, microservices, and the layering of big data, analytics, ML, and reactive user experiences into projects. Along with this growing complexity, continuous delivery has shortened the feedback loop while providing deeper insights to developers for each change.

Machines are better equipped than humans to act on continuous feedback and recommend changes for extremely complex systems. In the next decade, as machines become more involved in software construction and the market grows, I expect the first \$1 billion autonomous software vendor to emerge. DTC's investments in OpsMx (continuous validation of software

systems) and MoogSoft (machine-driven software operations) are two examples of companies creating building blocks for this autonomous future.

What's driving valuations in the space today and how does that differ by segment?

There are two drivers to DevOps valuations.

First, solutions that can address the broadest number of developers, data engineers, data scientists, PMs, and designers will have access to the largest TAM and hence drive the highest valuations. One example is DevSecOps, which embeds security practices within software construction. Since few developers continuously practice security, the potential reach of security vendors to a broader audience (Shifting Left) offers premium valuations.

This is taking place with the backdrop of tremendous growth in the software practitioner population. Current data says we could reach 100 million professionals by 2030, with an average annual budget of \$300,000 per developer for tools and infrastructure. This portends substantial market growth that will drive future valuations.

DTC recently invested in Lightbend, which offers developer technologies to build cloud-native workloads. Nearly 40% of application workloads will become cloud-native due to the emergence of Kubernetes and microservices. By making it simple for developers to build cloud-native applications using any programming language, Lightbend is another example of a vendor driving value by maximizing reach to the DevOps community.

Second, vendors that can improve the velocity of software delivery receive premium valuations. Software teams have strong incentives to improve cycle time through engineering efficiency,

“The growth in DevOps personnel, improving cycle times, and the increasing complexity of software systems and their supply chain are creating tremendous opportunities to invest in DevOps.”

acceleration tools, or automating repetitive tasks (such as RPA for DevOps) in order to stay ahead of their competitors.

How has the “shift left” affected your thinking about the wider DevOps environment?

As developers have come into their own as a market, vendors are creating more developer tools. The workload on developers has increased as they sort through the best options for each project. This creates a virtuous circle driven by the ever-increasing need to improve developer productivity. The net is where will see investments and opportunities around new language abstractions, IDEs, tools, SDKs, and frameworks that drive the productivity curve.

Our investments in Minio, an S3-like object store embeddable into applications by developers, and Tetrade, the vendor behind Istio and Envoy service mesh projects, are both examples of technologies that create distributed infrastructure productivity abstractions tailored for developers.

What do you see as the most interesting investment opportunities at the intersection of DevOps, AI & machine learning and security?

AI is going to supplement human knowledge and make it possible for software systems to adapt at the speed of machines. We will see this trend across the entire DevOps toolchain. For example, it is estimated that only 15% of the 3 billion lines of code written each week have unit tests. Machines will supplement human testing by simulating writing tests while developers author code to maximize coverage.

Which new markets for DevOps do you see opening to future investment?

Today there are a remarkable number of systems that are not yet programmable. In a few years, there will be over a trillion developer-accessible endpoints (APIs), processes, and services that will touch all aspects of our business and personal lives. This API transformation, driven by companies such as Twilio and Stripe, is in its earliest stages and has yet to fully penetrate most systems. We will see new businesses emerge that accelerate this transformation. A great example is NS1, which is transforming DNS into a programmable, global intelligent router. Net—the growth in DevOps personnel, improving cycle times, and the increasing complexity of software systems and their supply chain are creating tremendous opportunities to invest in DevOps.

Methodology

Industry

Using PitchBook’s dedicated IT verticals in combination with select keywords and primary industry codes, we then added in an existing set of DevOps vendors from segments such as security analysis, CI/CD and test automation to curate the dataset examined in this report.

Deals

PitchBook includes equity investments into startup companies from an outside source. Investment does not necessarily have to be taken from an institutional investor. This can include investment from individual angel investors, angel groups, seed funds, VC firms, corporate venture firms, and corporate investors. Investments received as part of an accelerator program are not included, however, if the accelerator continues to invest in follow-on rounds, those further financings are included.

Angel & seed

PitchBook defines financings as angel rounds if there are no PE or VC firms involved in the company to date and it cannot be determined if any PE or VC firms are participating. In addition, if there is a press release that states the round is an angel round, it is classified as such. Finally, if a news story or press release only mentions individuals making investments in a financing, it is also classified as angel. As for seed, when the investors and/or press release state that a round is a seed financing, or it is for less than \$500,000 and is the first round as reported by a government filing, it is classified as such. If angels are the only investors, then a round is only marked as seed if it is explicitly stated.

Early-stage

Rounds are generally classified as Series A or B (which we typically aggregate together as early stage) either by the series of stock issued in the financing or, if that information is unavailable, by a series of factors including: the age of the company, prior financing history, company status, participating investors, and more.

Late-stage

Rounds are generally classified as Series C or D or later (which we typically aggregate together as late stage) either by the series of stock issued in the financing or, if that information is unavailable, by a series of factors including: the age of the company, prior financing history, company status, participating investors, and more.

Invest in next generation cloud technology

We invest in passionate founders who push the envelope in enterprise technology – next generation hybrid/multicloud infrastructure, cybersecurity, DevOps, AI/ML, IoT, storage, compute, networking, and open source.

We are early-stage investors, lead rounds, take board seats, and prioritize leveraging go-to-market capabilities of Dell Technologies for the benefit of our startups. We have been a key investor in category defining startups such as Arista Networks (ANET), Cylance, DocuSign (DOCU), JFrog, MongoDB (MDB), Netskope, Nutanix (NTNX), and Zscaler (ZS).

Learn more at DellTechCapital.com

 **Technologies CAPITAL**