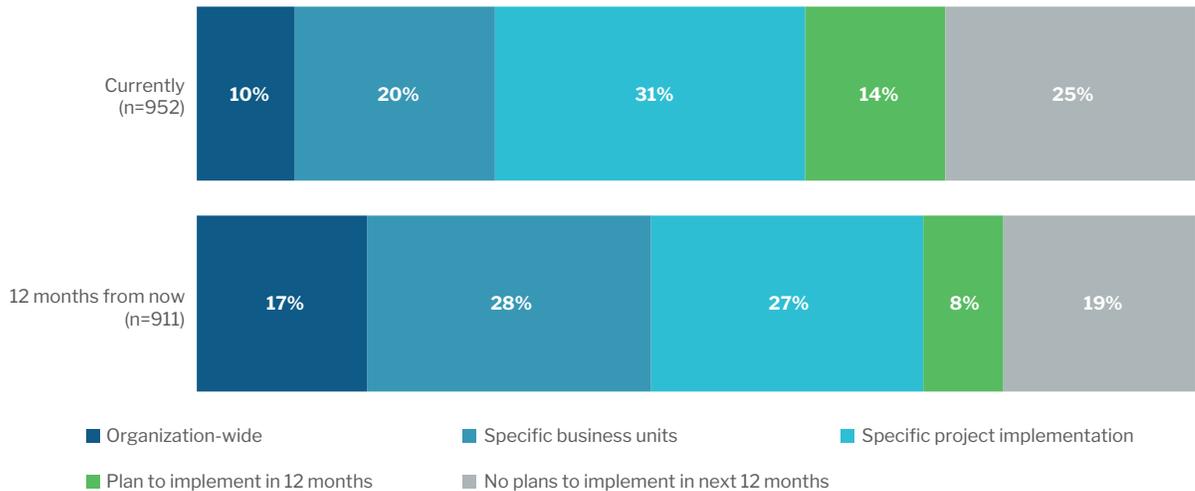# In DevOps, understanding change is key

The 451 Take

DevOps adoption keeps growing, with businesses of virtually all sizes and coming from all sectors embracing the approach for benefits that include the ability to push software releases much more frequently and improved collaboration across teams. However, DevOps adoption doesn't come without challenges. One of the key problems that we hear about is related to constant change in cloud-native environments – regular code deployments, resources such as containers spinning up and down, and automation are driving near-continuous change. Understanding the changes that occur is crucial for DevOps professionals tasked with driving top performance in apps and services.

DevOps Expanding in Coming Year

Source: 451 Research's Voice of the Enterprise: Digital Pulse, Vendor Evaluations

Q. Which of the following statements best describes the current status of DevOps implementation in your organization?

Q. Looking ahead 12 months, what do you think the status of DevOps implementation will be in your organization one year from today?

	Organization-wide	Specific business units	Specific project implementation	Plan to implement in 12 months	No plans to implement in next 12 months
Currently (n=952)	10%	20%	31%	14%	25%
12 months from now (n=911)	17%	28%	27%	8%	19%

In 451 Research's Voice of the Enterprise: Digital Pulse survey, 10% of respondents said DevOps had been implemented across their organizations, with a further 20% citing implementation in specific business units, and 31% in specific projects. However, when we asked respondents how their DevOps adoption might change in a year, they told us they expect a notable expansion: 17% said they expect organization-wide DevOps deployment, up from 10%, and 28% said they expect adoption in specific business units, with those broader implementations expected to overtake some of the more common specific project implementations.

Business Impact

The anticipated growth in DevOps adoption indicates that organizations are realizing the benefits of the approach. However, the dramatic increase in the rate of change enabled by the adoption of DevOps practices can have downsides. We see a notable and significant increase in change, and related challenges, in three categories:

- **CODE DEPLOYMENTS.** The ability to push software releases more frequently is a top driver for DevOps adoption, and organizations that employ DevOps are increasing deployments to a weekly, daily or even hourly cadence. While such frequent code pushes help businesses better serve customers, the constant rate of change, particularly in applications built on microservices, can make it particularly difficult to understand and solve performance problems.

- **EPHEMERAL RESOURCES.** It's not just code that is changing. DevOps teams are embracing new technologies such as containers, and orchestration tools like Kubernetes are intelligently moving pods and containers. From a management perspective, the challenges here are significant because operations professionals may require insight into a problem that occurred in a container that's no longer running.

- **AUTOMATION.** Complex, cloud-native technologies are difficult to manage and operate. As a result, DevOps teams are turning to automation for help with a variety of functions, including quickly solving performance problems. In addition, to support rapid releases, many DevOps teams are now treating infrastructure as code, automating configuration to enforce policies and remove repetitive manual work. This variety of automation being employed drives even more change into environments and sometimes masks underlying issues.

Traditional approaches to monitoring and management may not be able to serve such environments. For instance, a legacy monitoring product may not track code pushes, collect data on a regular enough cadence or integrate with tools such as Kubernetes. Collecting more data from more sources isn't enough, though. DevOps teams require tools that use sophisticated analytics techniques to surface important insights derived from large volumes of collected data. These insights help direct users to the root cause of performance problems, decreasing the time it takes to repair them or even prevent them. Intelligent analysis of operations data, including change information, can support other use cases as well. For instance, it also enables change control, ensuring that changes comply with policy and support performance objectives.

Looking Ahead

We anticipate a continued evolution of the types of requirements in demand from DevOps professionals responsible for applications running in cloud-native environments, with the goal being a much more automated operations function. Achieving a unified view into the changing environment will be a given, and the use of sophisticated analytics, including machine learning, will be required to derive intelligence from operations data, including change information. Without sophisticated analytics, DevOps and operations teams won't be able to pinpoint the root cause of performance problems.

We also anticipate the continued development of predictive intelligence techniques that learn from historical problems and their resolutions to both warn users that performance issues are likely to occur and also make recommendations about how to quickly solve problems when they happen. These developments ultimately will enable the automation technologies that will be required as cloud-native environments grow increasingly complex. With the right data and analytics, automation tools can make changes without the involvement of humans – to avoid performance problems or quickly solve them when they do occur. The building blocks that support this vision are falling into place.

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Enterprise IT organizations adopting DevOps must ensure that the benefits in agility thus gained do not also impact the stability and performance of their business systems. Along with a focus on speed driven by collaborative agile processes, automation, and transition to the cloud, intelligent controls based on automated collection and analysis of dynamic environmental data should be emphasized. Among these data are some that are frequently neglected – information concerning changes that have been made to the environment.