IDC ANALYZE THE FUTURE

IDC TECHNOLOGY SPOTLIGHT

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DevOps provides speed, flexibility, and resilience in support of rapid software innovation and greater competitiveness. It can have significant impact on core SAP applications that are critical enablers of digital transformation; SAP users should assess and adopt targeted DevOps tools and strategies for success.

Driving Agility, Efficiency, and Velocity for Business Applications with DevOps

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Introduction: Leveraging DevOps for SAP to Support Digital Innovation

Today, software drives digital transformation and optimization, competitive agility, and even corporate survival, and SAP applications are often foundational to successful business execution. IDC research indicates increased demand for DevOps practices across software portfolios to increase competitiveness, accelerate delivery of innovation, and improve business agility.

But a significant percentage of organizations still use traditional waterfall approaches for SAP development and deployment, limiting responsiveness. Deployment of new functionality can be as infrequent as once per year, while other areas of a business are updating applications weekly, monthly, or even daily. SAP customers urgently need to tap into the efficiencies that DevOps provides to meet the challenges of a modern digital economy. The ability to change critical systems at a fast pace, and the confidence to do so, can have a transformative effect on the ability of core SAP applications to effectively support business goals.

AT A GLANCE

KEY STAT

Integration of front-end systems into legacy environments is a top technology bottleneck cited by 77% of organizations, according to IDC research. The challenge of modernizing while dealing with these apps is formidable, inhibiting DevOps scalability.

KEY TAKEAWAY

Organizations must leverage DevOps to assess, modernize, and evolve core business software (such as SAP) to increase agility, responsiveness, quality, and velocity. Outcomes include greater efficiency, lower costs, and faster delivery of differentiating innovation.

This DevOps impact can be even greater in heterogeneous, complex, and highly interdependent software landscapes. Foundational business processes that other applications rely upon, or play a part in, are commonly enabled by SAP, so the overall pace of innovation may be limited by the speed at which SAP teams can adapt. Such cross-application disparities in deployment velocity are becoming increasingly problematic for organizations seeking to digitally transform their business.

How can technical and cultural barriers to the adoption of SAP DevOps be addressed with targeted automation and process change? This IDC Technology Spotlight considers the drivers of and obstacles to SAP DevOps success as well as opportunities to use modern tools and practices to successfully support the adoption of this new approach.

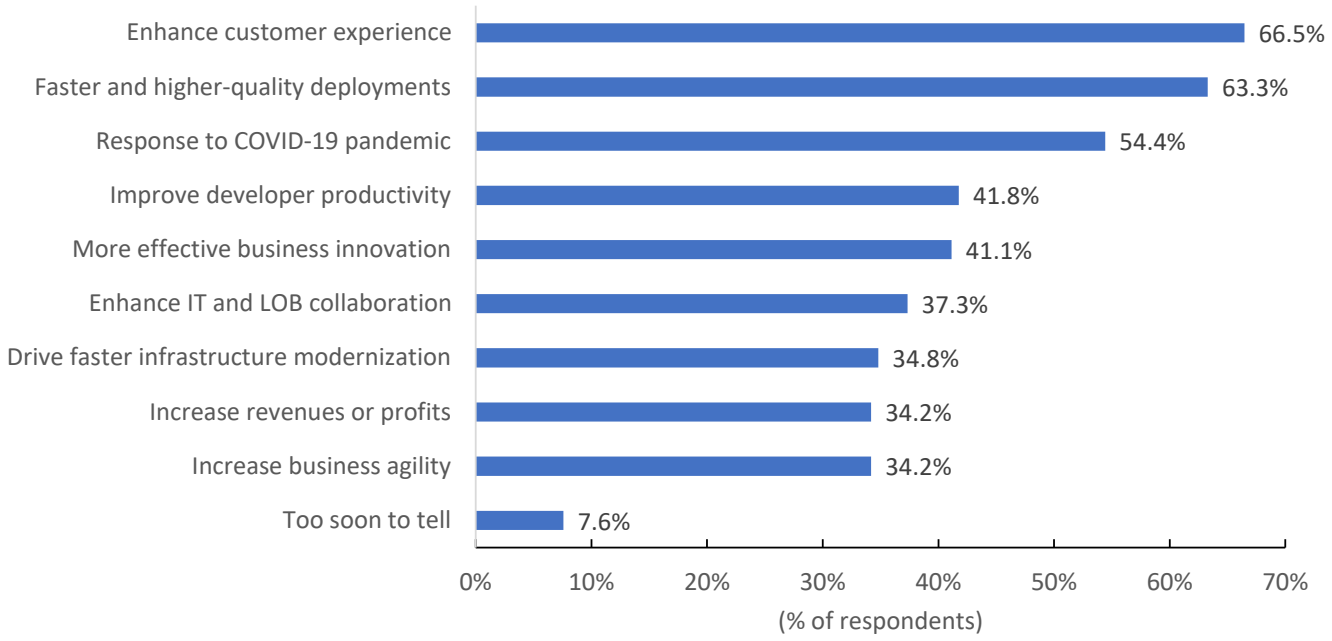
DevOps Benefits

DevOps represents the integration of application development and IT operations at many levels, including culture, process workflows, infrastructure management, and application creation, deployment, and delivery. Fundamentally, using DevOps principles leads to a faster, more agile approach to conceptualizing business innovation and converting those ideas or processes into user-accessible code.

According to IDC, demand to scale DevOps is driven by both business and technical outcomes. This includes enhancing the customer experience; delivering innovation more effectively through faster, higher-quality application releases; and improving developer productivity (see Figure 1). The rapid move to remote work and digitization necessitated by COVID-19 also revealed the need for greater responsiveness via increased DevOps maturity. This need to respond to unexpected change will endure.

FIGURE 1: ***Drivers for Scaling DevOps***

Q *What are the primary drivers to scaling DevOps across the enterprise?*



n = 160

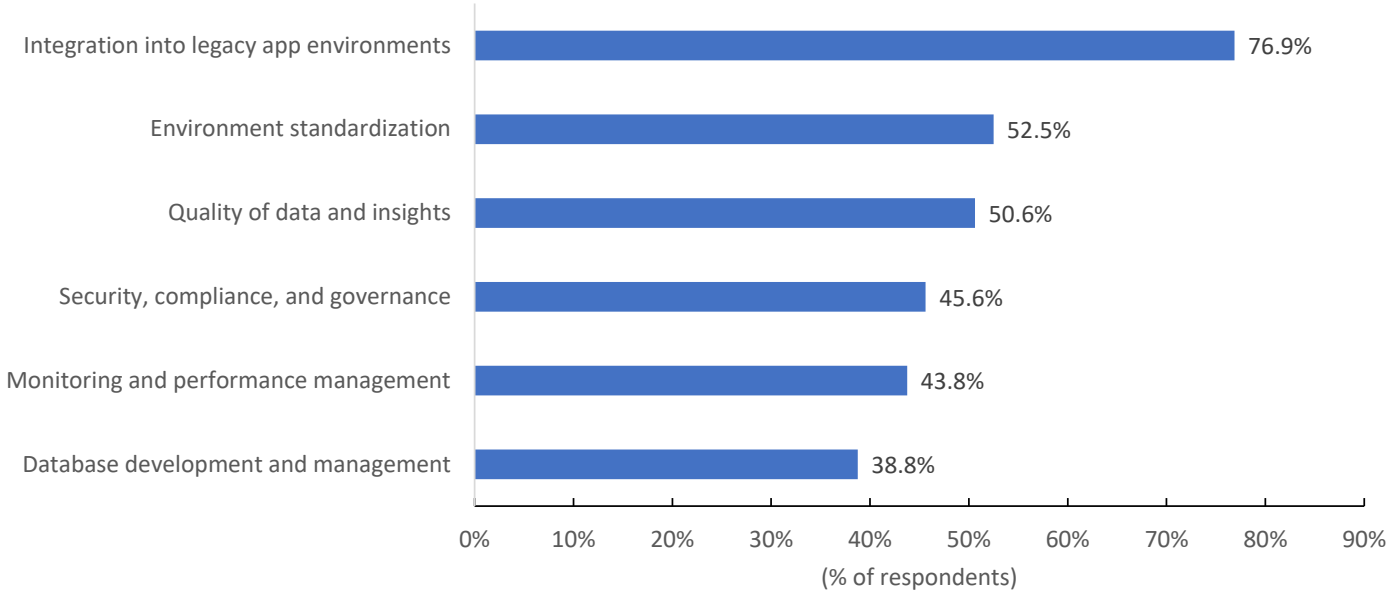
Source: IDC's U.S. DevOps Survey, September 2020

IDC sees growing evidence of the adoption of DevOps across IT organizations in general and a substantial opportunity for DevOps practices to help SAP teams deliver innovation more quickly, work more efficiently, and increase agility across the enterprise.

For example, IDC's annual *U.S. DevOps Survey* demonstrates the growing demand for more connected processes among IT professionals. Respondents cited integration into legacy environments as the top technology bottleneck in the application delivery process, followed by environment standardization and the quality of data and insights (see Figure 2).

FIGURE 2: ***Top Bottlenecks to Application Delivery***

Q *What are the top technology bottlenecks in your application delivery pipeline?*



n = 160

Source: IDC's U.S. DevOps Survey, September 2020

Effective DevOps practitioners claim a range of compelling outcomes. Business value is delivered faster and more frequently thanks to a higher cadence of software change, while the risk is dramatically reduced through improved quality and the ability to quickly recover from failure. Recent IDC research indicates an expected 30% increase in DevOps teams being able to deliver a high degree of business value by 2022.

Bringing DevOps to Life

DevOps adoption often involves changing people's work habits, tools, and communication methods. IDC has observed a number of common best practice guidelines for getting started that apply to nearly every organization's DevOps journey, including organizations operating in traditional SAP-centric environments:

- **Start with a solid foundation.** Ensure you have the groundwork of agile application development already in place via effective on-ramp strategies. Like DevOps, agile practices encompass both cultural transformation and enabling software tools.
- **Begin with a single project.** Incrementally adopt DevOps by first selecting a well-suited project or application to use as part of an initial pilot project.

- **Create value-stream mapping (VSM).** Once the candidate application has been identified, a VSM exercise will provide insights into how work moves through the delivery pipeline. The value stream map should include all the affected parties along the value stream and follow the flow of work from the initial customer request until it is made available for the customer to use in production.
- **Address major constraints.** Identify the most significant constraints in your backlog of work, and address those first for the maximum initial impact.
- **Agree upon metrics.** Ensure the metrics you collect measure and drive the changes you are looking for. Some sample metrics are deployment frequency, cycle time, availability, and MTTR, CSAT/NPS.
- **Don't be afraid of failure.** You need to enable and foster a culture that is not afraid to fail fast and use these experiences to better refine ideas and nurture innovation. (Note that "failure" in this context need not imply catastrophic outcomes of a kind unacceptable in SAP systems. It can alternatively be considered to mean an "outcome not matching that which was expected" as part of a framework that encourages experimentation.)
- **Celebrate success along the way.** Take the time to recognize teams and individuals for the success achieved along the way.
- **Rinse and repeat.** DevOps is not a destination; it is an ongoing approach to delivering software that enables a faster flow of distributing genuine business value to your customers and ongoing continuous improvement.

But there is no magic formula for adopting DevOps practices; every organization will need to embark on a journey that is unique to it and that considers its staffing profile and the applications it builds and supports. For enterprise SAP customers, a mature DevOps strategy may look quite different from that of digital natives such as Netflix, Amazon, and Google. Each organization will have a distinctive DevOps experience tied to its technology stack, business, and culture.

Extending DevOps to SAP

IDC sees substantial opportunity for DevOps practices to help SAP teams deliver innovation more quickly, work more efficiently, and increase agility.

Software automation — fundamental to both intra-application DevOps success and the creation of effective cross-application software delivery pipelines — is a prime example of the need to adjust DevOps approaches to different situations. Just as an overall DevOps strategy may need to accommodate the distinctive nature of large-scale enterprise applications such as SAP, the automation tools selected to support DevOps initiatives should address the specific technical requirements of core SAP systems.

Technical Challenges

The technical and architecture differences between SAP and other applications are significant. The main programming language in question, ABAP, and the "transports" used to move software changes are both specific to SAP, while a lack of compatible source control systems prevents the distributed development approach typical of many DevOps processes. Developers often work concurrently on the same SAP code base in a shared development environment, creating significant risks of conflict, error, and delay. These risks are exacerbated by the complexity and interconnectedness of SAP systems, where the sequencing of change and management of dependencies are critical considerations. Further, because SAP systems enable specific end-to-end business processes, the configuration of those systems may be just as important as the software code itself. This consideration is not addressed by standard DevOps approaches. In addition, the fact that only one live production instance of each core SAP application

exists can compound the risk of change because any error may negatively impact the entire system and perhaps even the daily operation of the business. (This is unlike a website or a mobile app, each of which may have many live variants.)

These combined challenges prevent SAP developers from directly employing standard DevOps strategies and tools such as Git or Jenkins to automatically build, test, and deploy updates. They also constrain the ability to coordinate changes with other applications and limit the visibility into SAP development progress (and that of dependent applications).

The requirement for cultural change and a process transition to DevOps is also a significant factor for a technical community that has historically tended to be risk averse and somewhat resistant to change. (This cultural issue is perhaps related to the "safety above all" attitude of many businesses toward their critical SAP systems.)

SAP-Specific Automation

To address the previously mentioned technical barriers, a growing number of firms are turning to SAP-specific automation to enable more effective software development and delivery. Such solutions are typically built from the ground up to accommodate the technical requirements of core SAP systems.

Dedicated SAP DevOps automation seeks to provide an SAP-specific application delivery pipeline with capabilities analogous to a standard continuous integration/continuous delivery (CI/CD) toolchain. This automation acts as an orchestrator of change across multiple dependent SAP systems, providing a single control point that leverages both built-in functionality and other SAP-specific tools for needed coordination. SAP DevOps automation should help eliminate expensive, error-prone manual effort and deliver improved software quality for confidence in higher change velocity.

Beyond SAP systems, SAP-specific DevOps automation should provide a technology layer that can connect SAP development and delivery to wider DevOps toolchains and processes for the coordinated delivery of software changes.

The benefits of employing DevOps for SAP closely mirror those experienced by other DevOps teams. Practitioners report an ability to shift away from long release cycles, often associated with a high degree of risk, to frequent, low-risk, high-velocity deployments that minimize expensive downtime while promoting greater business agility. The improvements in visibility, quality, and connectivity enabled by SAP DevOps automation can allow core systems to more effectively support the goals identified in Figure 1, such as enhanced customer satisfaction and more effective business innovation.

Role of Basis Technologies in Enabling SAP Modernization

Since 1997, Basis Technologies has provided SAP-specific automation software to help enterprises become more agile, innovative, and competitive. The company has executed well in a market that is in need of transitioning traditional SAP environments to DevOps to help create greater agility, efficiency, and velocity. As a result, Basis Technologies has experienced significant growth in staff, revenue, and customer base in recent years. An expanded network of global sales offices has extended the company's reach, with local teams in Europe, North America, and Asia/Pacific now supporting a widening base of SAP users. Basis Technologies has created a DevOps and test automation platform designed specifically to accelerate and reduce the risk associated with SAP software development and delivery processes. The platform consists of two products: ActiveControl and Testimony.

ActiveControl acts as a central point of control for changes to SAP applications. The product incorporates various technologies — including workflow customization, technical analysis, and the ability to roll back deployments — that automate SAP software change and release processes and seek to provide the speed, quality, and visibility necessary for DevOps success.

ActiveControl is also designed to provide a platform for bidirectional integration with popular non-SAP DevOps tools such as Jira, ServiceNow, GitHub, GitLab, and Jenkins, enabling the use of other best-in-class products for specific tasks such as automated testing. Through ActiveControl, SAP development and delivery can be connected to cross-application delivery pipelines to help increase speed, visibility, and efficiency. Basis Technologies has used this integration capability to demonstrate a distributed development scenario based on abapGit — an open source version control tool for ABAP code — and Jenkins.

ActiveControl includes features that support the transition to SAP S/4HANA (a common catalyst for DevOps adoption), notably "dual maintenance" automation and the ability to integrate with third-party tools such as smartRetrofit by smartShift Technologies.

Basis Technologies' Testimony enables regression testing of core SAP systems and seeks to reduce the risk of change by improving quality and increasing efficiency. Its robotic test automation (RTA) technology helps eliminate the need for script- or model-based testing by creating test libraries based on user behavior in live systems. Testimony supports a DevOps approach by enabling regression testing to "shift left" to earlier in the software development life cycle — potentially even before deployment of changes to QA systems.

Organizations of varying sizes can benefit from Basis Technologies' software automation, including many with massive and highly complex SAP estates, using the ability of software automation to help address the technical problems discussed previously in this paper. The Basis product portfolio is designed to help businesses:

- Deploy SAP changes faster with higher quality, greater efficiency, and cost savings, and do so at lower risk
- Accelerate transformation initiatives, increase business agility, and benefit from the faster realization of value
- Transition more easily to new SAP technology iterations to increase return on SAP investments

Basis Technologies cited one customer that used ActiveControl to move from twice-annual SAP releases to a weekly cadence through the adoption of DevOps for SAP. Another client was able to integrate SAP deployments into an enterprisewide DevOps pipeline via an external CI/CD tool, making SAP systems more responsive and enabling a multiyear DevOps initiative to move forward.

Challenges

Although growing rapidly with differentiated capabilities, Basis Technologies is a small to midsize company with the opportunity both to increase visibility of its product portfolio and to address the unique challenges faced by organizations wishing to adopt SAP DevOps. As more enterprises recognize the need for and are investing in DevOps for their SAP environments, IDC sees Basis Technologies' solid partner strategy with key third-party DevOps providers (as well as systems integrator relationships) and current marketing efforts as foundational opportunities for expansion in 2021 and 2022.

A primary challenge for Basis Technologies remains the resistance of organizations to changing entrenched mindsets and methodologies. Executive leadership can help create a DevOps transition by mandating change while educating the organization about DevOps benefits and promoting a culture of experimentation and learning that does not compromise on software quality.

Lack of coordination and disconnects between DevOps-specific teams (which are well versed in the benefits of DevOps) and SAP teams can also slow down the adoption of DevOps for SAP. Synchronizing those teams can be a chance for them to learn from one another, improving enterprisewide software delivery processes and fostering SAP DevOps acceptance.

Overall, Basis Technologies can respond to these challenges with delineated product capabilities, strong industry partnerships, and a base of customer success in the SAP DevOps arena. We see Basis Technologies' continued innovation sitting alongside an increased interest in DevOps among SAP teams and a solid partner strategy as a foundation for maturation moving forward.

Conclusion: Action Items for SAP DevOps

DevOps enables organizations to accelerate transformation and innovation by building, testing, and releasing software more quickly and reliably. However, DevOps processes designed for SAP software do not identically match mature DevOps processes in use for other applications. Specific challenges must be acknowledged and addressed to succeed with SAP DevOps. Providing teams with the requisite modern tools can help abate some of these challenges and provide a sound foundation for adopting DevOps in SAP environments.

IDC recommends that organizations take the following actions:

- Evaluate the status of core SAP systems and the opportunity for operational benefits arising from the adoption of DevOps practices. Technical considerations are a necessary condition for change, but cultural and organizational barriers must also be addressed.
- Create a staged strategy for SAP DevOps that encompasses people, processes, and technology. Use measurable outcomes from initial projects as validation for wider rollouts. Coordinate to enable DevOps initiatives across the organization for delivery speed and flexibility and to be able to respond dynamically to changing business demands.
- Assess SAP DevOps automation opportunities provided by vendors such as Basis Technologies and investigate how they can connect SAP to enterprisewide software delivery pipelines.

About the Analysts

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Melinda-Carol Ballou serves as Research Director for IDC's Application Life-Cycle Management (ALM) program. In this role, Ms. Ballou provides thought leadership as well as expert opinion and analysis through comprehensive research on end-to-end application life-cycle management — from requirements to quality, testing, change, continuous release, process, and project and portfolio management (PPM) with a focus on agile DevOps software life-cycle strategies.

Jim Mercer, *Research Director, DevOps*

Jim Mercer is a Research Director within IDC's DevOps Solutions research practice. In this role, he is responsible for researching, writing, and advising clients on the fast-evolving DevOps market. Mr. Mercer's core research includes topics such as rapid enterprise application development, modern microservice-based packaging, application security, and automated deployment and life-cycle/management strategies as applied to a DevOps practice.

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- **DevOps & Continuous Delivery:** Revolutionize the way you develop, test, and deploy continuous SAP change to respond more quickly to the needs of the market.
- **Change & Release Automation:** Transform the way you manage SAP systems, enabling fast, safe delivery of change that can set your business apart.
- **Robotic Test Automation:** Eliminate the challenge and expense of traditional test methods so you can deliver more innovation, more quickly, with less risk to your business.

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