Bridging the gap between Dev and Ops

IBM

A true Dev and Ops story

Highly innovative companies are improving their customer satisfaction and raising the bar for their competitors. How? By finally integrating and automating across their IT infrastructure, public cloud, private cloud and application environments. They make decisions based on value. They are agile and getting to market faster than ever. In fact, everyone is responsible for whatever needs to be done in that moment — the silos are finally gone.

So is it time to really align Dev and Ops? Is it an attainable goal? In short, the answers are yes, and this paper can show you how. You'll find out why aligning Dev and Ops is so critical, the impact it has had on organizations who have adopted this approach, and what it takes to get there.

Dev and Ops: Agile, effective application and service delivery

Digital transformation can have profound ramifications for your organization — including disrupted business models, higher customer expectations, emerging industries and channels. As a result, aligning Dev and Ops has become vital. In fact, in a recent study by Evans Data,[1] a combined 76 percent of the developers surveyed considered DevOps to be very or somewhat important for their future (see Figure 1).

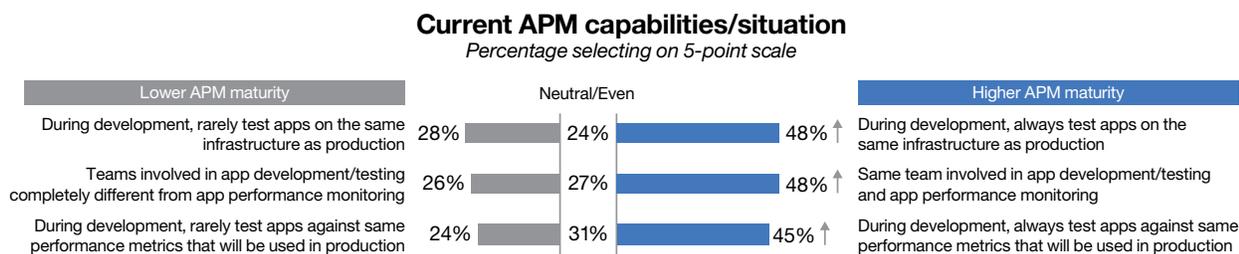**How important is DevOps to your overall digital strategy?**
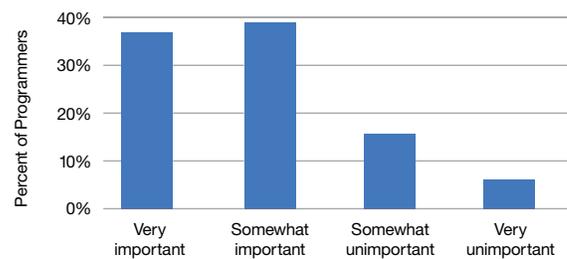
Source: Global Development Survey: Vol. 1, ©2016 Evans Data Corp. Date published: 05/31/2016.

Figure 1: A combined 76 percent of developers polled consider DevOps to be very or somewhat important to their future.

What is it about DevOps that makes it so critical? It breaks down the barrier between development and operations. Doing so sets the stage to deliver three key benefits:

- Speeding innovation delivery through frequent application updates (daily, weekly, monthly)
- Helping reduce the operational costs delivering releases — which have traditionally hindered agile delivery
- Aligning limited development resources with high value efforts by engaging directly with the user base

Current APM capabilities/situation
Percentage selecting on 5-point scale

Lower APM maturity	Neutral/Even	Higher APM maturity
During development, rarely test apps on the same infrastructure as production — 28%	24%	48% ↑ During development, always test apps on the same infrastructure as production
Teams involved in app development/testing completely different from app performance monitoring — 26%	27%	48% ↑ Same team involved in app development/testing and app performance monitoring
During development, rarely test apps against same performance metrics that will be used in production — 24%	31%	45% ↑ During development, always test apps against same performance metrics that will be used in production

Source: Research study data provided by IBM Market Development & Insights.

Figure 2: This chart depicts practices that are indicative of lower and higher APM maturity. Up arrows indicate blue bars are significantly higher than gray bars.

Beyond the need for highly efficient development processes and tools, operations need to expand infrastructure, public cloud, private cloud and application management tools outside of production environments. Development and testing environments now bear close technical resemblance to production environments. This similarity can make management of applications and services delivery easier to adopt. Now development can take advantage of traditionally production-oriented management capabilities, yielding benefits such as:

- Lower overhead and reduced cost monitoring and management
- Improved management of complex environments and end-user experience across the entire application and service delivery lifecycle
- Flexibility and scalability of application and service deployments with effective collaboration across development and operations

Dev and Ops: Roles and responsibilities converge — "shift left"

As organizations manage toward ever-shortening development cycles, it is critical that infrastructure, public cloud, private cloud and application environment management and monitoring address all phases of the DevOps lifecycle. Take APM (application performance management) as an example. Based on a global study IBM conducted involving over 500 participants spanning the DevOps lifecycle residing in both the IT department and/or lines of business,[2] about a third of respondents said that both production and application Dev/Test roles assume responsibility for APM solutions.
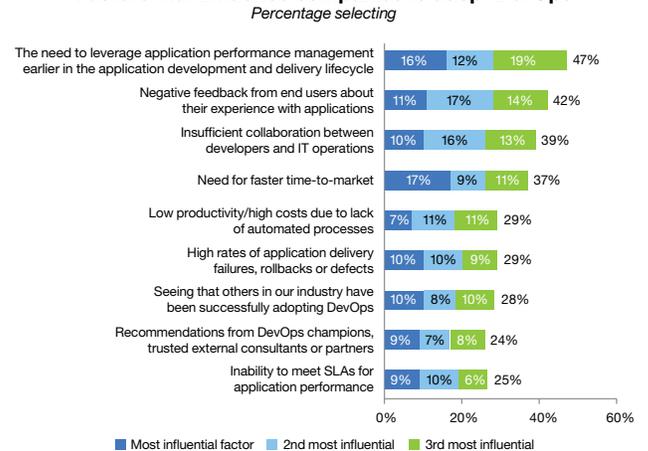
In the same research study, almost half (48 percent) of companies surveyed state that during application development, their applications were always tested on the same infrastructure as production, and that the same team involved in application Dev/Test was also involved in application performance monitoring on the operations side (see Figure 2).

Respondents anticipate a merging of these roles, with the gap between development and operations narrowing over the next two years. And, almost half of application owners say that the need to use APM solutions earlier in the application lifecycle was an influential factor in their adoption of DevOps practices (see Figure 3).

Once DevOps was integrated, almost half of respondents said the approach has actually improved the quality of their applications, while also helping to reduce downtime and increase customer satisfaction. Nearly all companies currently use or plan to adopt practices that will drive increased alignment between development and operations, including end-user feedback and continuous application performance monitoring (see Figure 4).

One of the missing links is being able to test and deploy applications and services under the same IT loads and environments that will be experienced in a production environment. To do this, processes and integration efforts among the various IT monitoring and management environments need to be accelerated. Using different processes and tools, like separate monitoring dashboards, drastically minimizes the benefits of an integrated approach. Highly innovative companies are doing everything they can to truly integrate and automate across their IT infrastructure, public cloud, private cloud and application environments. They are infusing their management tools with analytics to drive predictive insights and agility across both Dev and Ops, breaking down barriers and converging roles and responsibilities.

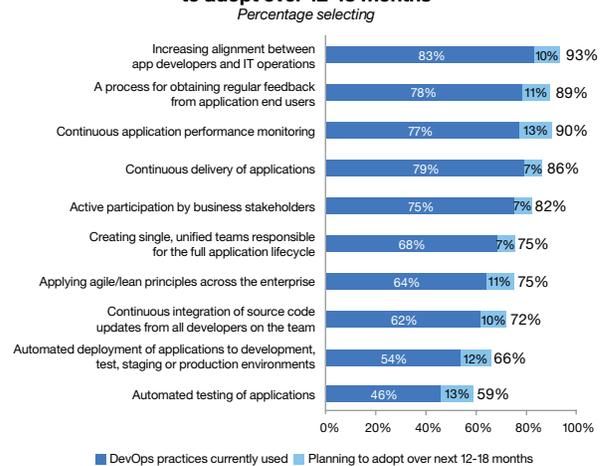**Factors that influence companies to adopt DevOps**
Percentage selecting

Factor	Most influential factor	2nd most influential	3rd most influential	Total
The need to leverage application performance management earlier in the application development and delivery lifecycle	16%	12%	19%	47%
Negative feedback from end users about their experience with applications	11%	17%	14%	42%
Insufficient collaboration between developers and IT operations	10%	16%	13%	39%
Need for faster time-to-market	17%	9%	11%	37%
Low productivity/high costs due to lack of automated processes	7%	11%	11%	29%
High rates of application delivery failures, rollbacks or defects	10%	10%	9%	29%
Seeing that others in our industry have been successfully adopting DevOps	10%	8%	10%	28%
Recommendations from DevOps champions, trusted external consultants or partners	9%	7%	8%	24%
Inability to meet SLAs for application performance	9%	10%	6%	25%

■ Most influential factor   ■ 2nd most influential   ■ 3rd most influential

Source: Research study data provided by IBM Market Development & Insights.

Figure 3: Respondents cite numerous factors as influencing their decision to adopt DevOps.

Their customer satisfaction is improving, too, because they are significantly reducing negative feedback from end users about their application and service experience. Since developers and operations are collaborating, companies practicing DevOps can deliver applications faster into the market. As shown in Figure 4, many companies advance their DevOps journey by:

- Increasing alignment between application developers and operations
- Enabling a process for obtaining regular feedback from application end users—resulting in higher rates of customer engagement and retention
- Driving continuous application performance monitoring
- Facilitating continuous delivery of applications

DevOps practices currently using or planning to adopt over 12-18 months
Percentage selecting

Practice	Currently used	Planning to adopt	Total
Increasing alignment between app developers and IT operations	83%	10%	93%
A process for obtaining regular feedback from application end users	78%	11%	89%
Continuous application performance monitoring	77%	13%	90%
Continuous delivery of applications	79%	7%	86%
Active participation by business stakeholders	75%	7%	82%
Creating single, unified teams responsible for the full application lifecycle	68%	7%	75%
Applying agile/lean principles across the enterprise	64%	11%	75%
Continuous integration of source code updates from all developers on the team	62%	10%	72%
Automated deployment of applications to development, test, staging or production environments	54%	12%	66%
Automated testing of applications	46%	13%	59%

■ DevOps practices currently used ■ Planning to adopt over next 12-18 months

Source: Research study data provided by IBM Market Development & Insights.

Figure 4: Respondents indicate a number of practices that they are currently using or plan to adopt over the next 12 to 18 months.

Note: Study participants were required to have a sufficient level of DevOps adoption.

Dev and Ops: Simply put

Robust development integrated with operations capabilities can help companies achieve greater innovation than their competitors. The IBM research study previously cited shows that companies further along the maturity curve introduced more applications over the past three years versus companies that are lagging. By continuing to enhance and extend operations management across the DevOps lifecycle, businesses can achieve even greater competitive advantages.

What comes next? DevOps

It is likely that there will be an increased correlation between the implementation of Dev and Ops practices. These include analytics capabilities, application environment monitoring and management, IT infrastructure operations and management, cloud management for multi-cloud environments, application and service quality, governance, and customer satisfaction. Also anticipated is the continuing convergence of roles and responsibilities between development and operations as DevOps reaches new heights on its adoption curve and traditional IT operations management tools continue to "shift left."

"When our end customers notice that we're moving forward, they're excited about the changes and they can see the benefits."

— App Developer, Wholesaler, 1,000-4,999 employees

Organizations looking to achieve the benefits of incorporating Dev and Ops solutions and maximize the performance of development and operations teams should consider some of the best practices implemented already by companies higher on the DevOps adoption curve. These include the ability to:

• Test and deploy applications and services on the same infrastructure and loads used in production environments
• Leverage the same team and resources across application and service development, testing and production
• Test applications and services against the same performance metrics that will be used in production
• Use an integrated and automated operations management solution across development, testing and production — including a single, unified dashboard infused with analytics
• Automate all application and service monitoring and management

These benefits can impact not only a company's business performance at the topline with higher revenues realized through greater customer satisfaction, but at the bottom line as well, translating to cost savings from reduced downtime.

DevOps and private cloud

A private cloud allows companies to more easily adopt a DevOps approach through customization of their environments according to their own unique development and operational needs and based on their own security requirements. A private cloud leverages the benefits of public cloud, including continuous delivery, scalability, ease of use and elasticity—but can also offer additional capabilities such as greater control, increased performance, predictable cost, tighter security and flexible management options.

"The biggest impact so far is increased productivity. We have much less down time than we did before. The next biggest impact is we are able to turn out newer technology faster. We're actually working on a better mobile solution that will reduce our cost on the mobility side and make our customers much more productive. This next release will also include a much enhanced web interface. I think our customers are going to be extremely pleased. None of this would have happened if we hadn't started down this DevOps road."

— CIO, Wholesale, 1,000-4,999 employees

Getting started

Perhaps you are just now considering a strategy to converge Dev and Ops. Or perhaps you have embarked on this journey but are experiencing challenges. Maybe you are already using Ops management solutions across the DevOps phases, but you want to enhance your approach.

IBM can help you incrementally adopt DevOps at your own pace, enabling you to make the most of your existing investments and build an environment where open source and proprietary lifecycle tools coexist and interoperate. This incremental approach enables you to accelerate innovation without tradeoffs of cost, quality or risk. To learn more on how the IBM DevOps approach can help you unify processes, cultures and tools across the application lifecycle, visit ibm.com/devops.

In addition, public DevOps methodologies like the IBM® Cloud Garage Method can break down DevOps into teams and roles. Find how-to guides on culture, best practices, tools, self-guided or hands-on training, and even sample code and architectures at **ibm.com/devops/method**
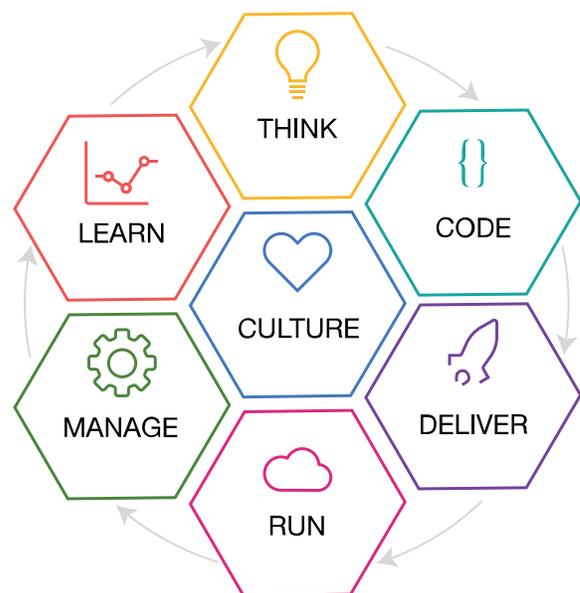
Figure 5: Public DevOps methodologies can break down DevOps into effective roles.

Adopting DevOps practices is not an all or nothing initiative. With a wide range of capabilities, IBM Dev and Ops solutions can help you, no matter where you are in your journey.

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	Capabilities	Benefits	More information
IBM continuous delivery	Build management, deployment automation, release planning and environment management capabilities	• Enable more predictable releases • Help reduce time between concept, rollout and feedback • Relieve bottlenecks • Accelerate time to market	Learn more at ibm.com/cloud/devops/urban-code-continuous-delivery
IBM software testing	Continuous testing practices that combine service virtualization to mimic unavailable systems with test automation	• Start testing earlier — "shift left" • Provide more immediate feedback to development to help resolve issues earlier • Help reduces costs, while improving quality	Learn more at ibm.com/cloud/devops/software-testing
IBM hybrid cloud management	Workload management across virtually all hybrid cloud scenarios deploying and managing virtual infrastructures as well as middleware such as databases, and application servers through a single template	• Assemble your pieces and deploy with a single click or API • Provide intelligent insights to optimize your landscape through IBM Watson® capabilities • Maintain control through effective, enforceable governance and intelligent insights to better mange a safe and compliant IT environment	Learn more at ibm.com/cloud/management
IBM Cloud Private	An enterpirse DevOps platform for building, deploying and managing enterprise workloads in a private cloud behind your firewall, with application services for cloud-native and cloud-enabled workloads	• Leverage built-in DevOps application services • Optimize heritage applications by making them cloud-enabled • Open data centers to work with cloud services	• Learn more at ibm.com/cloud-computing/products/ibm-cloud-private/

Table 1: IBM offers a wide range of Dev and Ops solutions.

	Capabilities	Benefits	More information
IBM application insights/ APM	Single user interface designed to more easily monitor internal and external applications to help detect and address software application issues before they affect end user performance	• Measure the customer experience from multiple locations • Help eliminate blind spots in your application environment • Help improve application quality and stability	• Learn more at ibm.com/cloud-computing/learn-more/it-service-management/application-performance-management/ • Check out a quick hybrid cloud walkthrough: ibm.co/2pDlsN4
Operations management	Empowers your IT operations to rapidly identify, isolate and resolve problems before they impact your business services	• Help ensure that your key application services are available to your clients and performing as expected • Gain full control of your IT infrastructure by efficiently triaging and resolving outage situations • Resolve problems faster through transaction-level analysis	Learn more at ibm.com/cloud-computing/products/devops/it-operations-management/
IBM PureApplication®	A hybrid cloud application platform for deploying application environments more quickly and repeatedly for both on-premises and off-premises cloud landscapes	• Help accelerate, automate and simplify application and middleware deployments • Provide built-in policies designed to enable security, resiliency, automated scaling and workload management • Help reduce errors	• Learn more at ibm.co/pureapp • Check out a quick hybrid cloud walkthrough: ibm.co/2pDlsN4

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