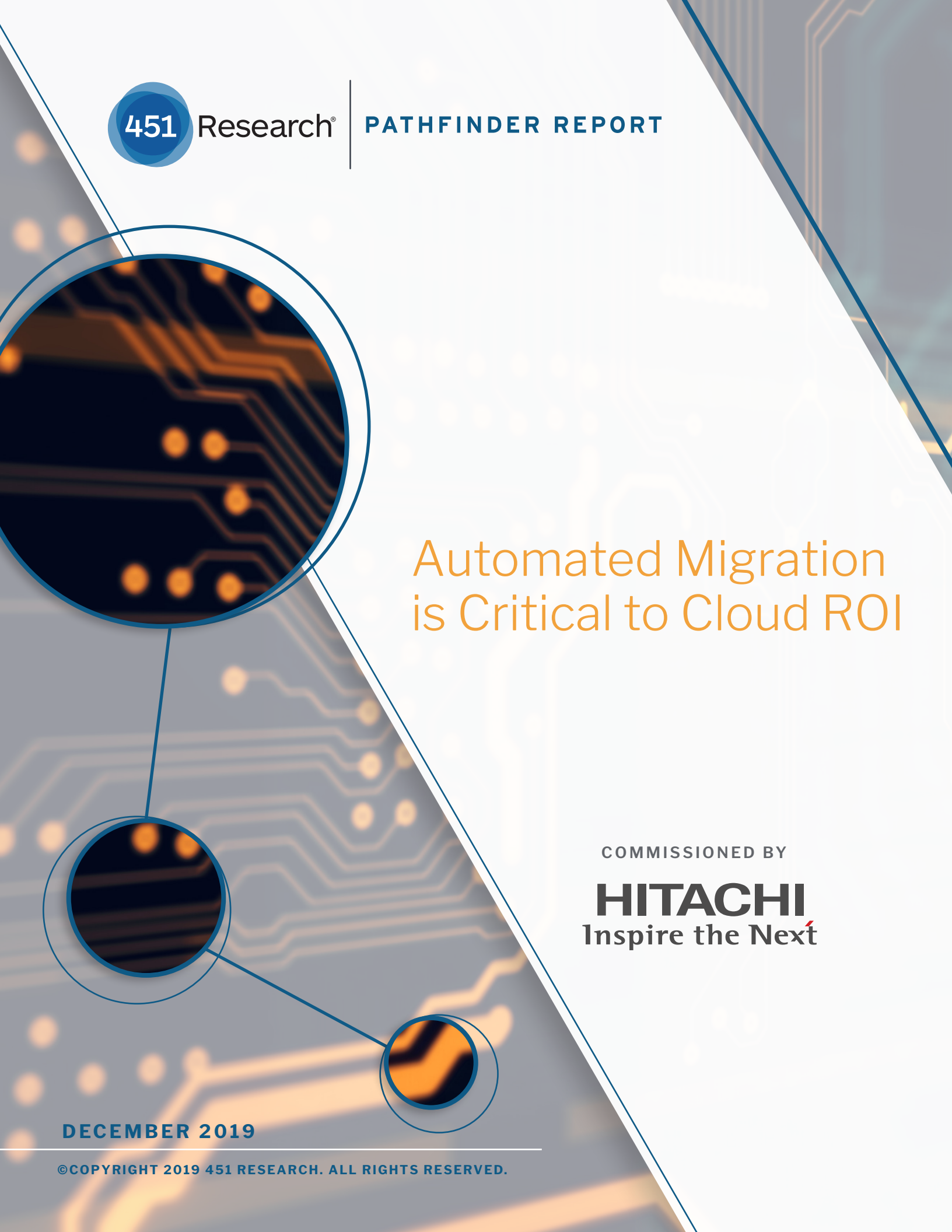


The logo for 451 Research, featuring the number '451' in white inside a blue circle.

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Automated Migration is Critical to Cloud ROI

COMMISSIONED BY

HITACHI
Inspire the Next

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About this paper

A Pathfinder paper navigates decision-makers through the issues surrounding a specific technology or business case, explores the business value of adoption, and recommends the range of considerations and concrete next steps in the decision-making process.

ABOUT THE AUTHOR



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Executive Summary

As enterprises move IT resources from traditional infrastructure to cloud, most have already identified the ‘low-hanging fruit’ – applications and data that can quickly and cost-effectively be rehosted with a lift-and-shift approach. In the past five years, employee productivity suites, data analytics and customer-facing functions have largely shifted out of the datacenter and into the cloud, due in part to the availability of mature software-as-a-service (SaaS) and platform offerings. 451 Research data shows that in two years, more than half of enterprises will be running these workloads off-premises.

Now comes the hard part: planning and managing migrations for more complex applications. Many of these workloads have evolved with the growth of the business to underlie the essence of a company’s value proposition or support business processes or unique customer service functions: Think financial service transaction systems, which are highly customized and represent valuable intellectual property. By their very nature, these systems can’t be adapted to a cookie-cutter environment. They may have legacy dependencies and strict governance, performance and availability demands; they may require continuous uptime to meet growing customer demands.

This undertaking carries risks, and the chief roadblock is uncertainty about whether the cost and disruption involved will pay off. Not all applications can successfully migrate to a public cloud environment. The potential benefits are compelling – including greater consistency of deployments and operational efficiency – but the cost of refactoring, testing and operating custom applications in public cloud environments is difficult to model.

An important way to reduce that risk – and to increase the likelihood that moving to the cloud will enable a faster return on investment – is to modernize workflows and implement DevOps practices during the transition so that IT teams can take advantage of the agility, scalability and richness of cloud services from the start. The automation made possible by such a shift can improve employee productivity and morale while expanding the customer experience. This makes migration more than a matter of moving workloads; it becomes a catalyst for transforming the business itself.

“The biggest rationale [for cloud], I think, is to drive consistency. And consistency enables automation, automation enables efficiency... The other side of the coin is really about being able to move quickly, and speed and agility.”

– MID-LEVEL MANAGEMENT, \$10BN+ FINANCIAL SERVICES FIRM

The modernization of IT environments is not a matter of if, but when. The majority of enterprises (57%) are pursuing an integrated hybrid cloud strategy in which on- and off-premises environments can work productively together. While this is largely an aspirational goal – the nirvana of seamlessly operating applications across heterogeneous environments is still a work in progress – organizations that seize the opportunity to modernize their environments to give developers and IT operations teams a shared, business-oriented platform will have an early start on the right path.

The Challenge and Opportunity of Migration

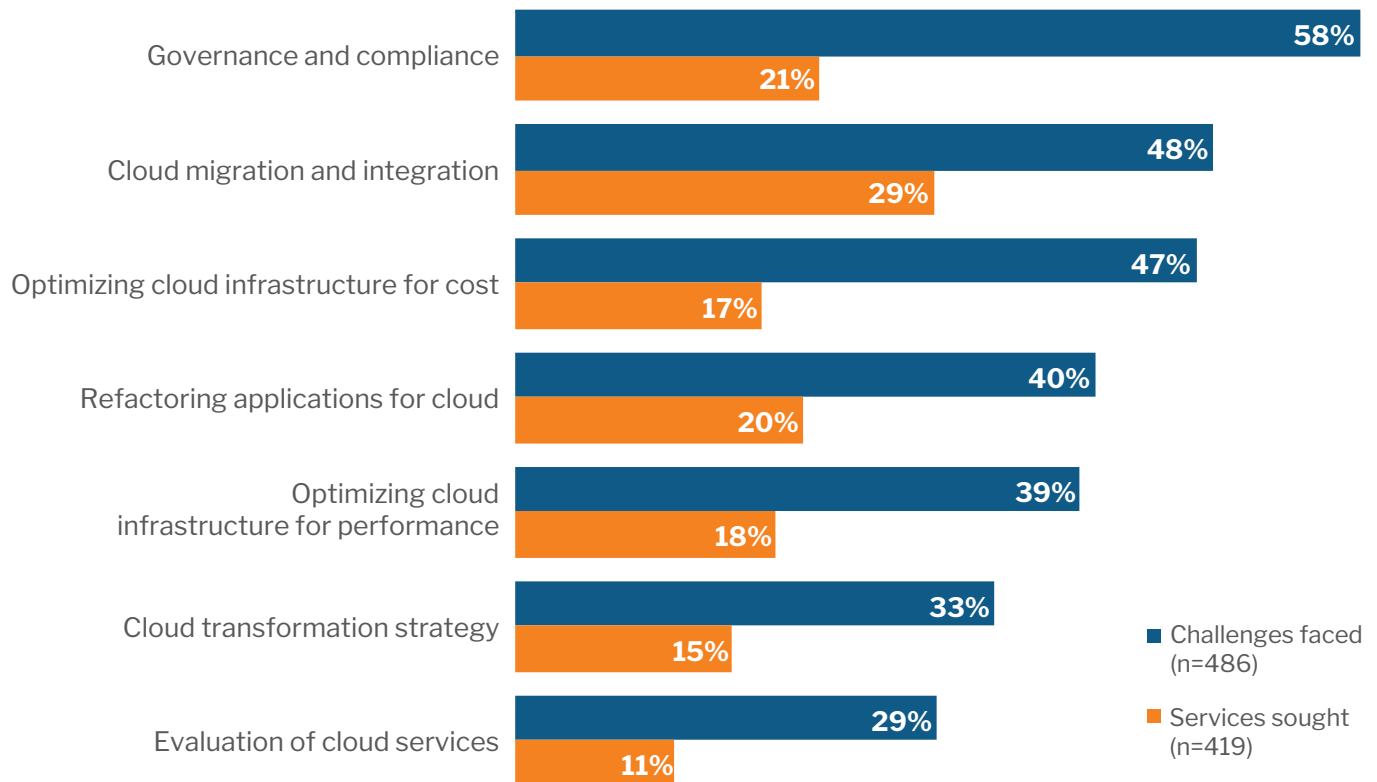
Migrating IT workloads is hard; companies often enlist outside experts to help, and with good reason: Experience matters, and migration specialists have developed tools to smooth the way. A recent 451 Research Voice of the Enterprise: Cloud Hosting & Managed Services survey shows that 48% of IT decision-makers consider migration and integration to be a top challenge in adopting cloud, and 29% plan to seek professional services to assist in the effort.

Figure 1: Cloud adoption challenges and enablement opportunities

Source: 451 Research's Voice of the Enterprise: Cloud, Hosting & Managed Services, Budgets and Outlook 2019

Q: Which of the following challenges does your organization face as you implement cloud?

Q: For which of the following challenges are you most likely to seek professional services?

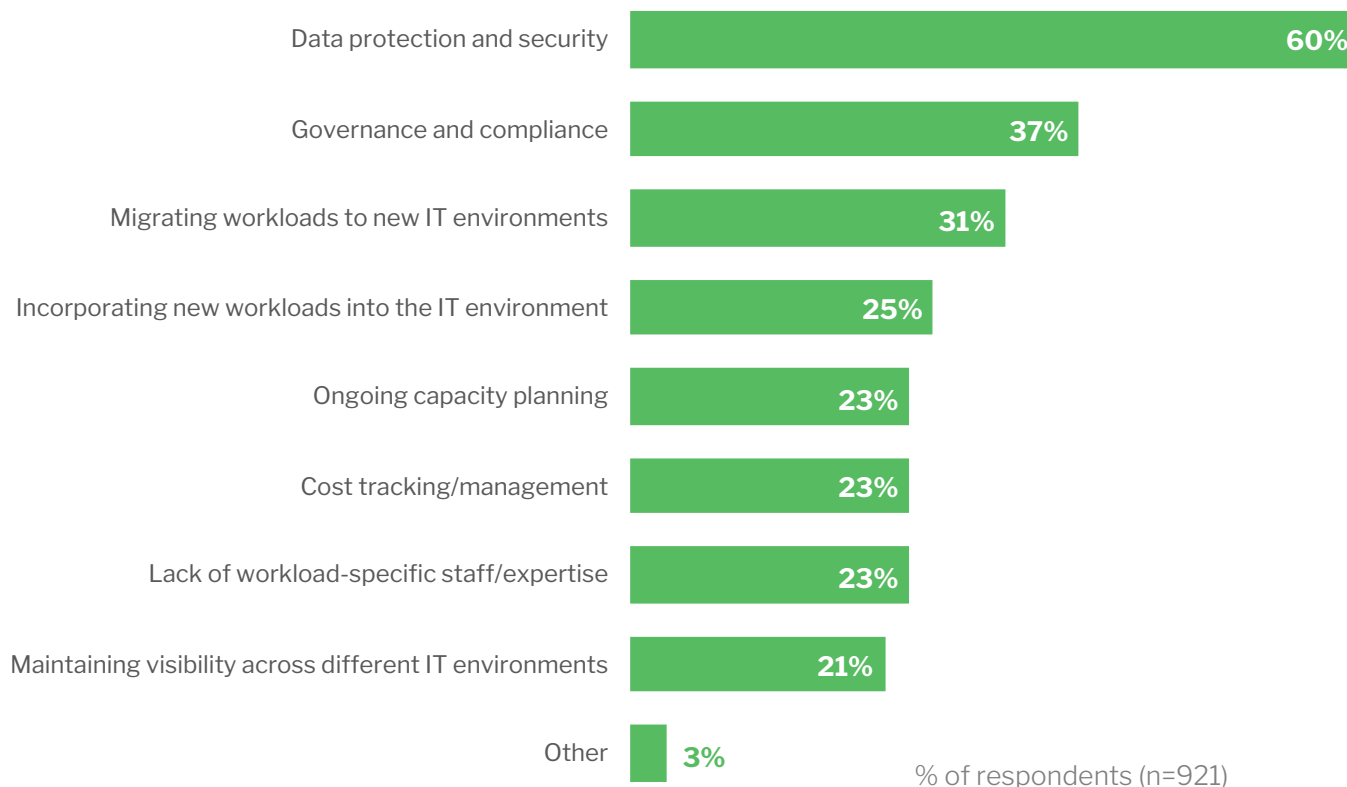


Some systems are obvious candidates for public cloud deployment. These workloads – including employee productivity suites, customer-facing functions and data analytics – are met in the market with mature offerings that take advantage of public cloud's virtues: geographic diversity, resource scalability and the ability to quickly iterate functions according to business needs. But the resulting hybrid environment, consisting of both on- and off-premises compute and data stores, has led to a fresh set of challenges for IT departments.

Figure 2: Workload-related IT challenges

Source: 451 Research's Voice of the Enterprise: Digital Pulse, Workloads and Key Projects 2019

Q: Which of the following represent the most important workload-related IT challenges your organization faces at the moment?



Lift and shift as a migration strategy is faster and requires less effort than refactoring applications to take full advantage of cloud. Workloads that can be effectively moved to cloud this way include backup and disaster recovery, virtual machines with applications and data that work largely in isolation, and long-term file and object storage. Such moves promise a quick return on investment, with freedom from the burden of provisioning and maintaining company-owned infrastructure. Results vary depending on the underlying infrastructure services, cost structure and ability to deliver required levels of customer service. These changes have to be timed, planned and executed properly to coincide with a technology refresh to minimize duplicate resources, and costs must be kept under control – ‘renting’ cloud capacity is not cheap.

“We’re still going down the path of figuring out our cloud strategy. When I look at cloud, there’s some great automation pieces to it. There’s some serious costs if you don’t know what you’re doing, and too, it’s somebody else’s computer so you’re basically buying time on somebody else’s box.”

– IT/ENGINEERING MANAGEMENT, \$2.5-5BN FINANCIAL SERVICES COMPANY

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But what about the more complex applications – the ones that may have legacy dependencies and strict governance and performance demands? The calculus of deciding whether these can cost-effectively move is more difficult, and the risk can be considerable. Yet, when figuring out the potential gains, in addition to financial expense, companies must consider opportunity cost – the benefits of cloud that will be passed up by not having cloud-native workflows in place from the beginning. This can also be referred to as capability cost.

In the early days of cloud adoption, some providers recommended lifting and shifting workloads and then modernizing them, but this approach has fallen out of favor for several reasons. First, only a minority of applications can make the transition from on-premises to off-premises without at least some rightsizing: On-premises resources that are capitalized are more forgiving in terms of cost than cloud infrastructure that's being charged by the second or gigabyte with the meter running 24/7. Second, taking advantage of some of public cloud's best deals requires planning: Committing to (and paying for) a certain level of usage can cut costs over 70% versus on-demand prices, but it requires a one- to three-year advance purchase. Third, a move-then-modernize strategy is tantamount to migrating twice – once to a new location, and then to a modern application environment.

“[A few years ago] we weren't doing agile and DevOps and stuff. A lot of our custom software we almost regretted creating because it became very expensive and fragile, and you can only do one or two updates a year, and then it was a huge big risk, your upgrade. And [a new CTO] was coming from a company that everything was agile and DevOps, where they were doing multiple releases a week and everything fully automated with CI/CD, and very low-risk upgrades ... So, it was a new leadership that said hey, you need to be 100% focused on digital transformation. And that changed the cloud strategy or the hosting strategy.”

– IT/ENGINEERING MANAGEMENT, \$10BN+ FOOD, BEVERAGE AND AGRICULTURE COMPANY

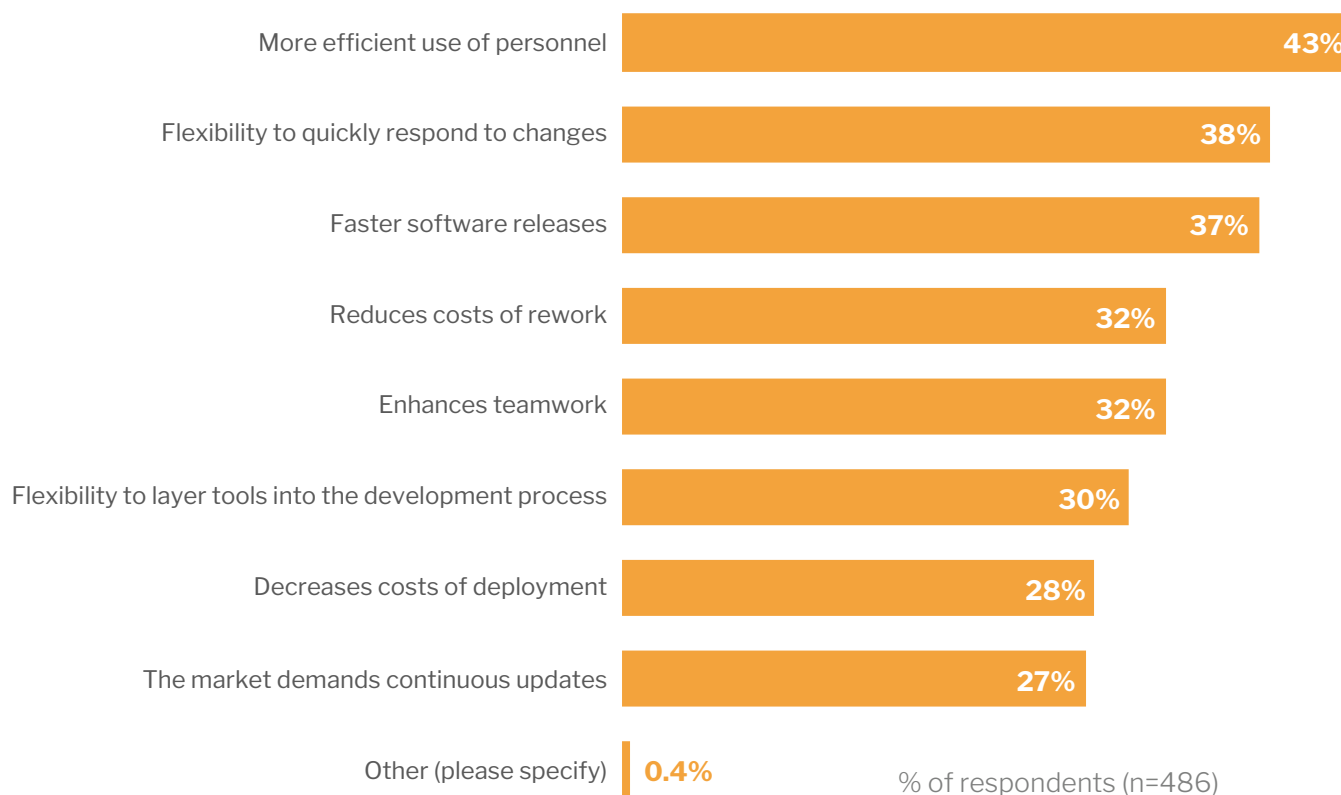
Using tools to migrate applications into more flexible and easier-to-manage configurations can save time and effort and thus contribute to a faster ROI. Rather than shifting applications wholesale – thereby guaranteeing that difficult-to-manage ‘snowflake’ environments are simply replicated in a new location – such tools create a ‘landing zone’ with a consistent and automated approach to securing data and applying policies. Not only does this build a framework that can be iterated and adapted for future migrations, it also generates deployments that are easier to manage and better suited to the cloud environment. This reduces friction for operations and puts developers and IT teams on the same page with respect to infrastructure.

The benefits of modernizing applications and using DevOps techniques are not just financial: They make the business more responsive to customers, create IT efficiencies, reduce employee toil, enhance teamwork and improve security.

Figure 3: The benefits of DevOps

Source: 451 Research's Voice of the Enterprise: DevOps, 2H 2019

Q: How is a DevOps approach benefiting your organization? (Check all that apply)



Use Cases

Workloads best suited to modernization include ones that can bring technology to bear on processes to add business value: leveraging company data to assist in business decision-making, optimizing IT resources to properly balance cost and performance, and improving the customer experience. Typically, this involves containerizing and in some cases refactoring monolithic applications into smaller, more focused microservices that can be reused and updated independently, with minimal or no downtime, while improving visibility into IT processes, performance and cost. This can be a daunting challenge for complex, highly proprietary, custom-built business applications; any cloud-delivered services must earn the right to be considered production- and customer-ready.

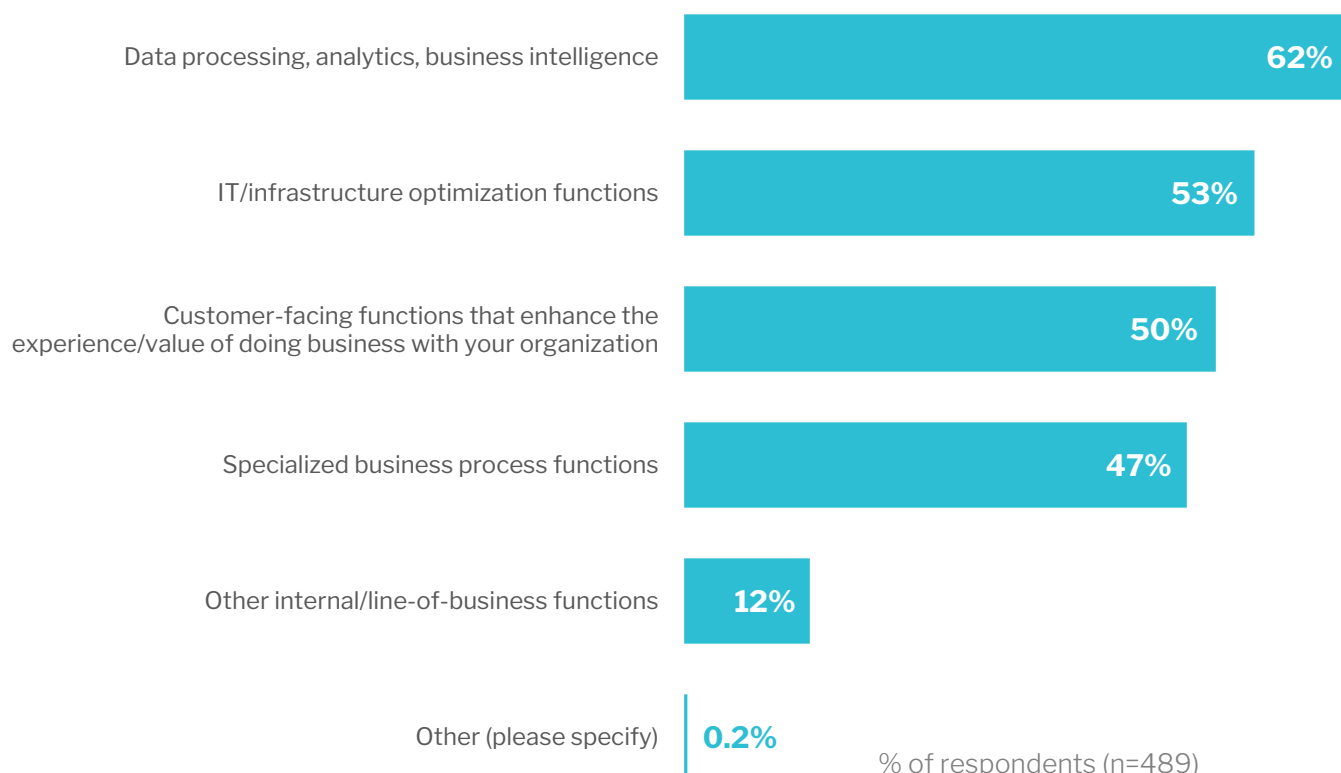
Following are some scenarios and the business benefits they can bring.

- **Extending to cloud for faster application development.** Much of the cloud's value is being driven by developers who can use their preferred programming languages and platforms to write code while having role-based access to a company's cloud-based development and test workflows. In a modern application environment, processes can be automated to ensure a consistent approach to securing data and applying policies. Within a particular project, for example, new resources spun up by a developer will automatically inherit the security safeguards and governance characteristics defined for that environment. This allows developers to focus on business logic rather than infrastructure and relieves operations teams of having to configure individual virtual machines and storage devices.
- **Consolidating diverse data sources for on-demand access.** Many organizations have widely distributed data stores, which may be in different physical locations and a variety of formats. Perhaps an enterprise has obtained through acquisition a significant set of data assets containing the target company's valuable intellectual property. Without a central repository for this information, fruitful analysis and collaboration becomes difficult, and employees waste time looking for or replicating data. One advantage of a modern cloud-based IT environment is the possibility of automated lifecycle management of workloads and storage volumes and consolidation of data stores for analysis of complex data relationships. For big data repositories, cloud-based AI and machine learning models can be trained to find and surface only the most relevant files or objects, greatly shortening the distance between users and the information they need, yielding lower costs and greater productivity.
- **Decommissioning the datacenter.** Whether it's due to an acquisition, budget cutting or a push for transformation from the C-suite, businesses may need to quickly 'get out of the datacenter business' and move to public cloud and/or colocation facilities. This can be a blessing in disguise, forcing an organization to make a frank assessment of which applications should be retired, which functions can be carried out with mature SaaS or platform-as-a-service (PaaS) offerings, and which can move to public cloud or a hosted private environment. A recent 451 Research survey shows that workloads most amenable to modern application workflows include data processing, IT/infrastructure optimization routines, customer-facing functions and specialized business processes.

Figure 4: Types of applications using a DevOps approach

Source: 451 Research's Voice of the Enterprise: DevOps, 2H 2019

Q: For which types of applications does your organization take a DevOps approach? (Check all that apply.)



Moving workloads to cloud ideally reflects a change in orientation, from a server-centric perspective to an application-centric view that enables the infrastructure to adapt to the needs of the software. This is what's behind the success of many born-in-the-cloud companies: The app-centric approach makes the organization more responsive to the customer, and it can cost less, too. In fact, many businesses that have taken the plunge and embraced the transition to modern cloud-based application environments find that the benefits are too good to be confined to off-premises deployments; more productive ways of working find their way back into the datacenter, helping achieve operational consistency in hybrid scenarios.

"We're heavily investing in... automating our process for building stuff and delivering it into environments, so that's also playing into the cloud world. We are adding automation-type and orchestration capabilities for on-premises cloud equipment... making some of our on-premises environments cloud-like in the way they're experienced."

– MID-LEVEL MANAGEMENT, \$2.5-5BN FINANCIAL SERVICES BUSINESS

Conclusions

For many workloads, migration is a difficult but necessary step to more efficient use of IT resources. Organizations arriving at a technology refresh are finding more choice than ever in terms of where their applications and data can live. An application-centric point of view should drive decisions on where workloads will be best situated, and for some this means transferring processes to mature SaaS or PaaS offerings. Many of these migrations have already taken place for workloads such as employee productivity suites, human resources software and customer-facing systems.

The challenge is greater for more complex applications. Companies may have built and customized these systems over the years, perhaps starting with off-the-shelf software and adapting it to the needs of the business. These programs may benefit from moving to the cloud and adopting more modern architectures, but organizations may say, 'If it ain't broke, don't fix it.' While IT teams may want to avoid disturbing the status quo, competitive necessity may dictate moving forward with IT transformation to make systems more responsive to stakeholders (including developers) and customers. The key question becomes whether the work involved will deliver a return on investment – will the pain and effort of moving to cloud be worthwhile?

An important way to contribute to faster ROI is to modernize workloads as part of the migration process, implementing DevOps practices for greater flexibility and an app-centric approach to development. Ironically, moving operations off-premises can increase IT's control over applications: containerizing workloads, setting up pipelines and deconstructing program functionality enable greater visibility into processes, more consistent management and the opportunity to automate security and policy routines.

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The lift-and-shift strategy for moving workloads to cloud has largely worn out its welcome. With few exceptions, even minor changes to refactor applications for cloud operation will result in more efficient use of resources. For more complex applications, migrations should go hand in hand with app modernization. The benefits of adopting DevOps techniques are not just financial – they help make systems more adaptive and responsive to customer needs. Planning for and investing in such a transformation can enable faster ROI for cloud deployments and set the business on a path for future opportunities to optimize IT in service of company objectives. Connect with Hitachi Vantara Cloud experts [here](#) to plan and implement a successful cloud strategy.

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