

# Application Modernization as a Business Outcome Accelerator

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# About the Author



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As Research Director, William is responsible for the Cloud Native Channel at 451 Research, a part of S&P Global Market Intelligence. With a 20+ strong team of collaborators, this Channel provides a point of intellectual convergence for 451 Research around cloud native computing and offers customers a direct path to understand its adoption and impact across all sectors.

William has a long history of tracking cloud infrastructure, beginning with its foundational elements such as distributed and grid computing and virtualization, establishing and running 451's Cloud Transformation Channel for more than a decade. He created 451 Research's early adopter research program, working with enterprise end users and innovators, and he created 451's Digital Economics Unit in 2014 and the Blockchain Center of Excellence in 2017. In 2020 he formed the Cloud Native Channel to focus on the re-platforming to cloud native constructs and such as containers, service mesh, Kubernetes and serverless, from application and infrastructure perspectives. William has been a member of the European Commission Cloud Expert Group, co-authored The Future of Cloud Computing Report and worked on various EC-funded cloud projects.

Prior to starting 451 Research, William was a financial and technology journalist with ComputerWire (now part of Informa) in London and New York. He has held various senior management roles at 451 Research since 1999. William has a master's degree in computing science from the University of Portsmouth, and a BA in Government and Sociology from Essex University.

# Introduction

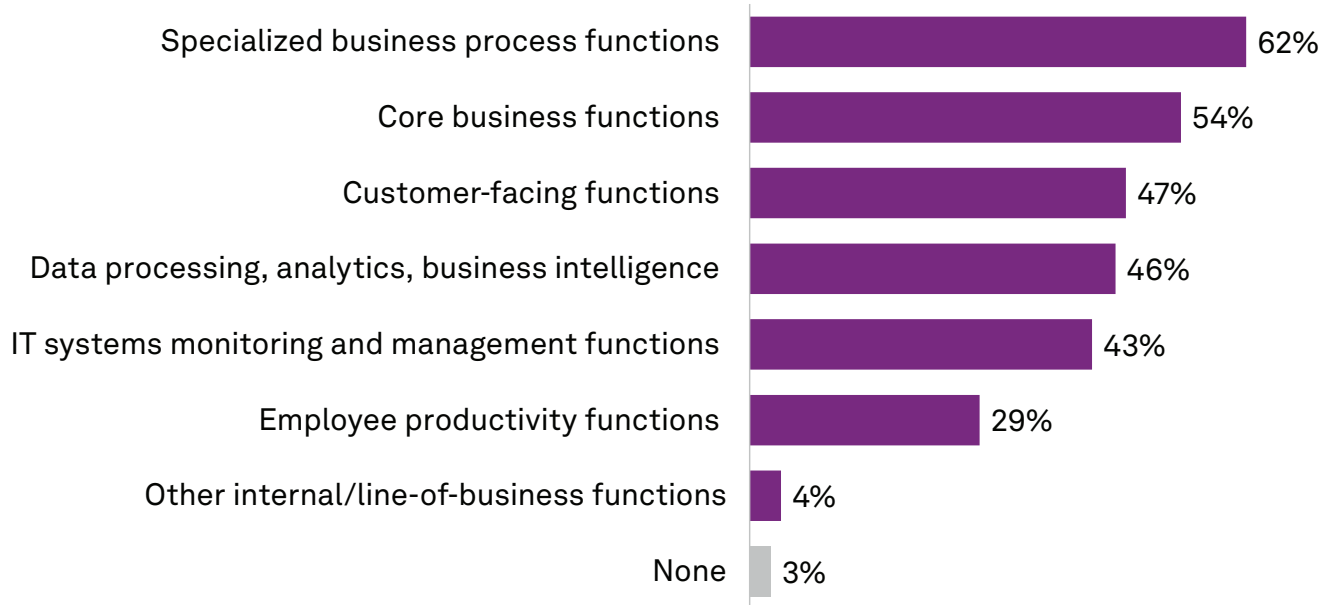
Many enterprises have already reaped the ROI benefits from the easy wins for cloud transformation and application modernization. Human resources, CRM, sales and productivity suites have largely moved to subscriptions and SaaS. However, to achieve the key outcomes promised by these transformations — including better performance, efficiency, cost and customer experience — enterprises need to modernize the monolithic core business applications, and they need to do it now.

Decomposing these core applications by carving away functional blocks that can be maintained independently is tougher, but the benefits are compelling. Moreover, the practices and technologies underpinning born-in-the-cloud applications are what manifest the potential of modernization efforts to create responsive systems that are more resilient, secure and easily maintained. Figuring out which applications can be modernized and refactored cost-effectively and where they can run best outside the monolith or legacy environments takes knowledge and expertise. Components of cloud-native stacks are myriad; they include containers, container orchestration tools, microservices, high-level programming languages and libraries, DevOps methodologies, data management and analytics, continuous integration/delivery (CI/CD) pipelines, observability and service mesh. The number of components further increases the level of know-how required to properly decompose a legacy application. Modernization of an application portfolio happens in three broad phases:

- Discovery/assessment of the current environment.
- Analysis of code and application topology to find components that can be updated.
- Re-platforming or refactoring of the applications.

The key questions for enterprises to consider are what to modernize, why modernize, how to undertake modernization, and how soon they can achieve it. According to recent 451 Research survey data (see Figure 1), industry-specific software and custom-developed code are the workloads most in need of modernization (62%).

Figure 1: “The what” — which types of workloads need modernization



Q. At your organization, which of the following types of workloads need modernization? Please select all that apply.

Base: Organizations expressing need for some degree of modernization (n=307).

Source: 451 Research's Voice of the Enterprise: Digital Pulse, Application Modernization 2021.

While new applications can take advantage of best-of-breed services on public clouds, brownfield applications are more stubborn. There are business risks associated with changing mission-critical applications, which are likely to be among enterprises' most complex applications because they are generally built and maintained over years or decades to support highly specialized functions. Modernizing them requires significant expertise.

A common approach to modernization is to sort these applications into buckets using the seven “Rs”: retire, retain, relocate, repost, re-platform, refactor/rearchitect and repurchase. But determining which action to pursue requires deep insight into existing operations, application interdependencies and the organization itself. However, because most legacy applications were not designed to run in a cloud environment, simply lifting and shifting applications to cloud platforms can result in cost overruns, underwhelming performance and overall disappointment. To this end, and to accelerate the effort to achieve the best outcomes, most enterprises do not relying on a single strategy for modernization, but favor refactoring.

Many enterprises have passed the lift-and-shift stage. For larger, more complex systems, achieving the efficiency, scalability and innovation benefits of cloud deployment requires a new view of data and application architecture, one that can be difficult to navigate when working from within organizations that have evolved around outmoded systems and processes. This is particularly true for core business functions, which 54% of survey respondents cited as needing modernization. Getting the mission-critical and business-critical aspects of modernization right will determine whether the enterprise attains the desired outcomes.

Enterprises can achieve major progress by improving their ability to ingest data and then uncover relevant business insights from it — 46% of enterprises cited data processing, analytics and BI as workloads that need modernization, fourth on the list in Figure 1. None of this modernization happens independently of the cultural and organizational change needed to deliver it. Shifts in the software development mindset, such as the move to cloud native and agile processes, are complex and may face resistance. Modernization partners that can assist at all points — technology skills, domain expertise and change management — will help accelerate these efforts more effectively than an enterprise constrained by these factors can alone.

# The Take

Enterprises are increasingly deploying net new and modernized applications on cloud-native platforms. However, core business applications, which have evolved and grown over the decades since they were built, limit the ability of organizations to reap the full range of cloud benefits. This creates a state of uncertainty and, in most cases, constrains enterprises' ability to evolve. So why modernize applications? Enterprises see modernization as a strategic move. Although cloud-native patterns are still evolving, the technical debt that builds by continuing to support pre-cloud infrastructure reduces the ability of internal IT teams to deliver value to the business quickly and economically.

Starting on the modernization path — often by carving out customer-facing services that can more easily be separated — begets greater knowledge of the application and opportunities for further innovation. It allows enterprises to take full advantage of cloud benefits, and as such, business intelligence, security, digital innovation and cost optimization become the drivers for business outcomes.

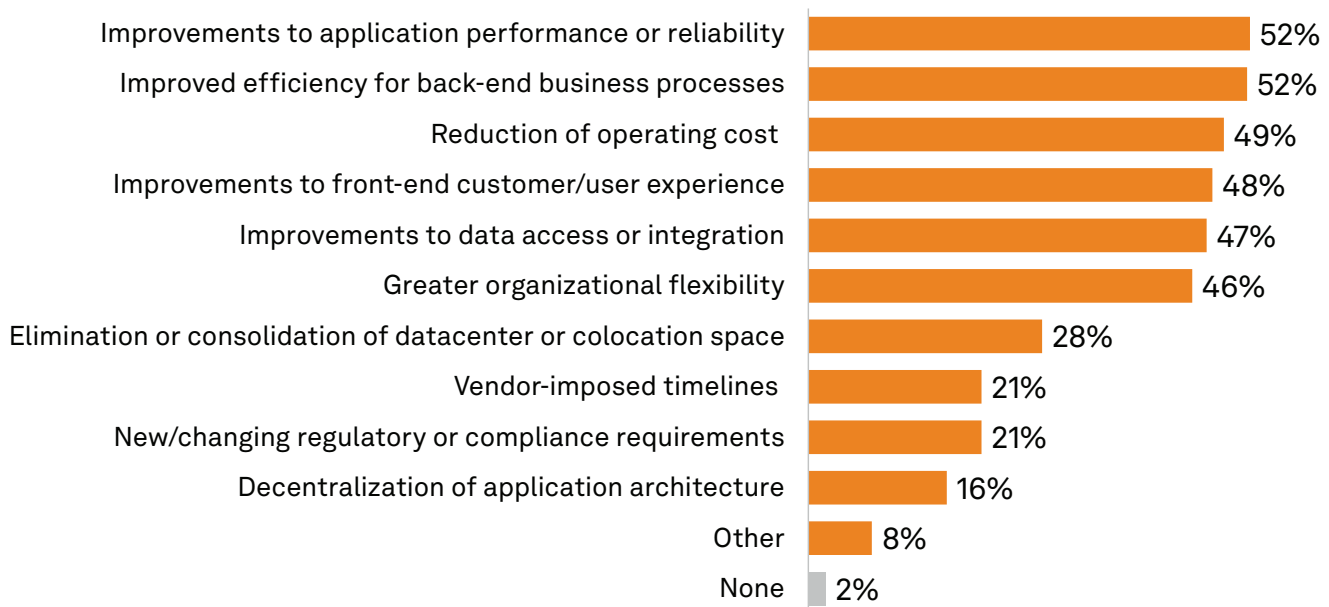
With many companies struggling to find and retain IT staff, undertaking digital transformation can seem like a herculean effort. But legacy applications continue to accrue technical debt over time, which makes companies vulnerable to disruptive competition. The sooner a business starts transitioning to cloud-native deployment models and ways of thinking, the faster it will develop the knowledge and productivity gains to propel it to the next level.

Working with a modernization partner can help IT operations teams take care of the infrastructure and the orchestration platform, find the right venue for the right workload and develop a phased migration plan, an imperative for success. This saves developers, DevOps teams and site reliability engineers from manual configuration tasks so that they can instead focus on creating innovative features and products. Accelerating the application-modernization effort this way has the potential to pay off not only with more efficient operations and greater developer productivity, but also with the adoption of practices and technologies that can inspire organizational change, leading to happier teams and a more competitive market position.

# Modernization Expectations and Drivers

What should organizations expect from making this leap to cloud-native application modernization? Performance and efficiency improvements are the most broadly held outcomes of modernization (see Figure 2). Most enterprises' modernization efforts are driven by a need to improve application performance (cited by 52% of respondents as a driver) and improve efficiency for back-end processes (52%). Outcomes that can be measured and that successfully deliver on goals are important in a number of ways. They can be used to legitimize the next set of modernizations and provide evidence that an enterprise has updated its own culture, processes and organization sufficiently to achieve these outcomes. It brings the opportunity to both build on and accelerate this behavior as a continuous process that can drive the business forward. Enterprise respondents cited other drivers as well, including improvements to operating cost (49%), user experience (48%) and data access and integration (47%).

**Figure 2: “The why” — primary drivers for modernization**



Q. Which of the following — if any — are the primary drivers for your organization's efforts to modernize legacy applications? Please select all that apply.

Base: Organizations expressing need for some degree of modernization (n=292).

Source: 451 Research's Voice of the Enterprise: Digital Pulse, Application Modernization 2021.

Modernization efforts are widely expected to be long-term projects. In 451 Research's 2021 Voice of The Enterprise survey focused on application modernization, respondents were asked, "How long will it be until your organization achieves its current application modernization goals? Most of the organizations with modernization requirements (64%) expect it will take more than a year to reach their current objectives, and 34% expect it to take more than two years. Another 16% have no expected timeline. Only 20% of organizations expect to complete their modernization efforts within the next year. This shorter timeline is more common in companies that describe their modernization requirements as "very small" (35%), and especially those that are at the execution stage with low requirements (45%). These findings create a plain urgency regarding timelines — a driver for accelerating the effort. The changes required to deliver application modernization will not be instantaneous; some organizations will require years of work to reach modernization goals. In some cases, businesses have been building their critical IT applications for 30+ years; these won't be unwound and modernized in an instant. However, the time is now to engage and start working through this challenging problem.

We believe that organizations already working within the shared responsibility model — with a cloud provider and potentially a modern managed service provider — can accrue additional benefits, such as the shared process knowledge and experience providers can bring. This can accelerate application modernization efforts through a holistic plan based on first-hand experience to help businesses modernize and greatly improve an organization's position for success.

# Conclusion

The key to success is to take a methodical, phased approach that meets the desired business outcomes and prioritize which workloads to transform first. Leaning on the experience and expertise of a partner with the right assessment and refactoring tools can significantly improve the ROI. Part of the whole modernization promise involves using systems' own data and intelligence to automate tedious manual processes — a feat that surpasses human comprehension as systems become more diverse and complex and more connections need to be managed and secured. The software itself needs to be set up to enable monitoring, security and automation of these processes, rather than adding on capabilities when development is further along.

The more complex the monolith, the greater the value in modernizing, yet the unpredictability of the time and expense required for such refactoring has prevented many organizations from taking the risk. Moreover, access to talent is now a greater constraint than access to capital: Investing in skills is costly. Partners are therefore critical for bringing application and infrastructure modernization skills to the table — in particular, value-added services that can be applied at any stage of the customer's journey, providing complete life cycle support for the application transformation journey versus specialized domain expertise.

The task of application modernization is daunting for many organizations, as reflected in the fact that fewer than half of the organizations surveyed in 451 Research's Voice of the Enterprise: Digital Pulse, Application Modernization 2021 study are actively executing on modernization. Skills gaps and resource shortcomings are part of that delay, and most respondents believe they will require support from outside organizations to meet their modernization objectives. Technology and skills required for application modernization are tightly coupled with cloud-native capabilities such as K8S, serverless, API development and management, E2E stack management and hyper automation. There is great opportunity for the growing group of service providers that are positioning themselves as effective shepherds of application modernization.



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