IDC TECHNOLOGY SPOTLIGHT

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This IDC Technology Spotlight examines how mainframe application modernization can help organizations capture cloud benefits sooner and extract more value out of their mainframe applications without increasing risk.

Accelerating Business Transformation Through Mainframe Application Modernization

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Introduction

AT A GLANCE

KEY STAT

Nearly 62% of organizations view application modernization as a very high or top priority today, with more than 70% rating modernization as a very high or top priority within the next three years.

Organizations are positioning application modernization as a higher priority for their IT initiatives. Drivers behind this trend stem from corporate imperatives aimed at improving operational efficiency, cost savings, and innovation. A lack of deep customer insights, business agility, and a common platform from which to support business transformation has led organizations to renovate their legacy mainframe applications. However, transforming large, complex legacy applications is risky. Making mainframe applications more modular and fit for the cloud can lead to application outages and increased costs and dependency to onboard new cloud talent, thereby increasing pressures on IT operations. Leveraging tools that mitigate application modernization risk while harnessing cloud benefits can help companies establish a more favorable path toward business transformation.

Trends

Modernization Is a Vehicle to the Future Enterprise

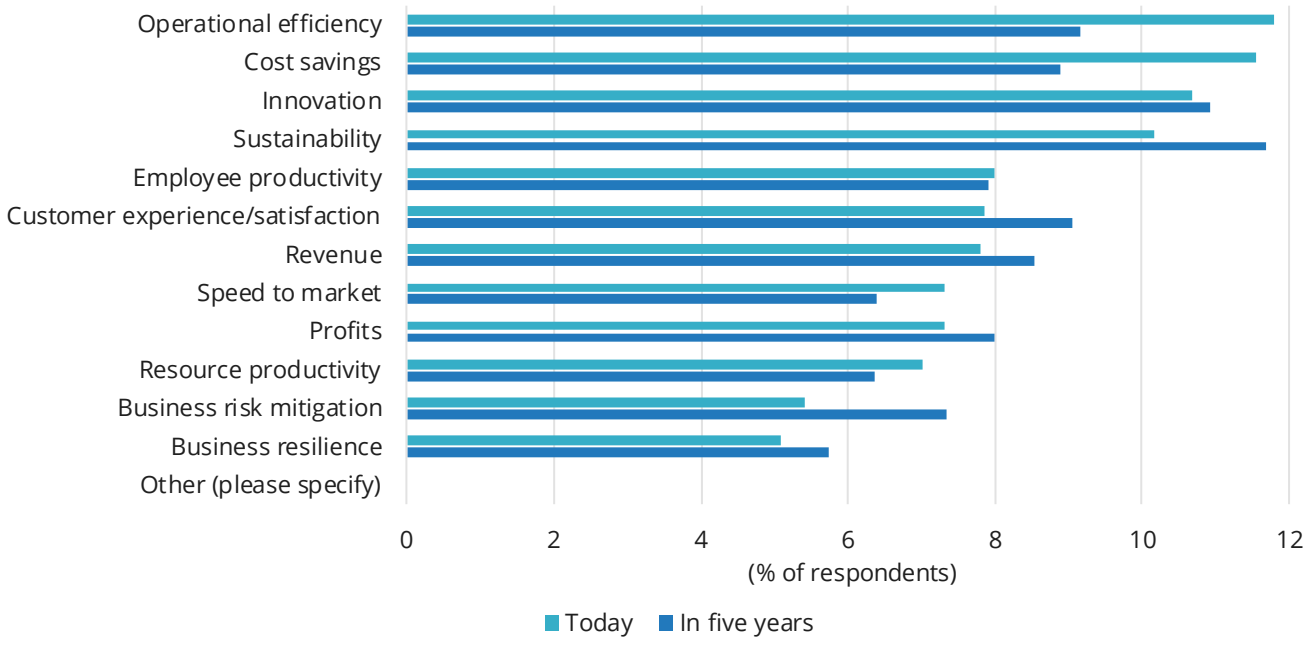
Enterprises aiming to establish stronger foundations to improve business resiliency are looking at restructuring internal processes, infrastructure environments, and mainframe applications that support those business processes. A lack of real-time customer and operational data, combined with fragile supply chain operations, has prevented many organizations from managing cash flow effectively. In addition, maintaining older systems' environments has created barriers to building innovative capabilities that can help enterprises better manage cash flow. As a result, businesses are looking at application modernization to boost cash flow while simultaneously increasing organizational flexibility, agility, and resiliency.

Along these lines, IDC research has discovered that:

- **Mainframe applications represent significant portions of application portfolios:** IDC has found that organizations with 1,000+ employees have diverse application portfolios spanning multiple application types. On average, mainframe applications represent roughly 12% of the application portfolio today and are expected to constitute 13% of the application portfolio in the future.
- **Priority for application modernization is rising:** Nearly 62% of organizations view application modernization as a very high or top priority today, with more than 70% rating modernization as a very high or top priority within the next three years.
- **Application modernization drivers will change over time:** The business drivers for application modernization are diverse today and are expected to evolve in the future. Current drivers for modernization center on increasing operational efficiency, with cost savings and better enabling innovation also rating highly. In five years, however, enterprises expect these drivers to shift more toward sustainability and innovation (see Figure 1).

FIGURE 1: ***Business Imperatives for Application Modernization***

Q ***Which of the following business imperatives is a top priority driving your organization's application modernization initiatives today, and which do you expect will be in the next five years?***



n = 702 (all respondents)

Notes:

Data is weighed by GDP.

For more details, see Worldwide Application Services (IDC #US50037816, January 2023).

Source: IDC, 2023

Enterprises Face Steep Challenges with Modernization

Because application portfolios are highly diverse, contain multiple application types, and are often integrated with one another, enterprises face mounting challenges to achieve their modernization objectives. These complexities with the application portfolio, combined with talent shortages and competition for funding, have presented modernization challenges that span areas including strategy, people, process, and technology.

IDC's findings have revealed that core modernization challenges revolve around:

- **Driving synergies between business and IT strategy:** Today's application and mainframe environments are more complex. High degrees of integration between mainframes and other disparate applications, as well as growth in application portfolio sizes and increased application hosting environment complexities, have made developing a sound mainframe transformation strategy more critical. With the variety of options available, such as code refactoring, microservices, and containerization, it is becoming difficult for organizations to choose the operating model that best fits their organization's vision, culture, and goals.
- **Existing IT cultures:** Changing culture remains a critical element for any modernization effort. Incentivizing talent and moving approaches and operations away from what's familiar and comfortable are often the biggest impediments to achieving successful results with modernization efforts. Organizations must shift mindsets through not only executive leadership and vision but also grassroots and motivation. Core components to helping organizations change cultural norms lie within effective leadership, constant communication, consensus building and shepherding, inclusiveness, and incentives.
- **Having the necessary resources, skills, and talent:** Acquiring and applying the right talent for the job are linked to cultural transformation. Cloud requires different skill sets than traditional mainframe management, and approaches to software development and management are iterative and incremental. These approaches are usually aligned with continuous improvement and execution methodologies such as DevOps, continuous development and continuous integration (CI/CD), and site reliability engineering and are in stark contrast to highly gated and sequential processes such as waterfall.

Leverage Cloud Benefits Without Overhauling Legacy Mainframe Applications

Many approaches to application modernization center on rearchitecting mainframe applications to microservices and containers to reframe application architecture to cloud. Challenges with this approach involve securing the necessary labor, tools, capital, and time to initiate and execute application modernization.

An alternative approach to mainframe application modernization includes rehosting mainframe applications in more modern technology environments. This approach enables organizations to lessen the risk of mainframe modernization through maintaining existing applications' architecture and code and leveraging software tools to compile, package, and maintain legacy code.

More specifically, organizations can:

- **Maintain existing application architecture and mitigate modernization impact:** Through rehosting, organizations can continue to utilize existing application architecture while operating in a cloud environment. Rehosting in this fashion helps organizations avert and mitigate tasks for re-platforming and refactoring, which can increase costs for mainframe to cloud migration and modernization.
- **Unlock cost savings while minimizing capital risk:** Rehosting can afford organizations opportunities to reduce operational costs. Labor, hardware, operating systems, and licensing for software, as well as backup and recovery, can inflate operational costs for organizations choosing to operate their mainframe applications both within their datacenters and on premises. Migrating and modernizing mainframe applications to cloud environments can help organizations eliminate those costs and enable organizations to repurpose capital for on premises and data hosting elsewhere.

Considering UniKix Mainframe Rehosting Software by NTT DATA

NTT DATA's mainframe rehosting software, UniKix, is designed to help enterprises preserve existing application investments and extends the benefits of distributed platforms to migrated IBM CICS transactions, IBM IMS applications, IDMS, Natural Adabas, and other assets.

Key benefits of the software include:

- **Reduced IT operations costs:** UniKix can help organizations reduce infrastructure and IT operations costs by 30–70% by eliminating MIPS, hardware, and license expenses, according to NTT DATA.
- **Easier path to cloud adoption:** UniKix enables enterprises to adopt cloud more easily by removing the need to rearchitect mainframe applications for cloud technical architecture. It also allows organizations to preserve the business logic within both their mainframe applications and their user interfaces. The software maintains existing application architecture while enabling mainframe applications to operate on cloud.
- **Mainframe simplification:** UniKix helps enterprises identify dead code and technical debt through mainframe application and code construct analyses.
- **Increased automation and lowered dependency on aging talent:** UniKix helps enterprises enable foundations for CI/CD pipelines and reduces risk of internal talent that's retiring by moving mainframe apps to the cloud.

The points of differentiation of the solution include its:

- **Cost-effectiveness:** UniKix is a lower-cost alternative to rearchitecting mainframe applications to contemporary code and technical microservices architecture.
- **Flexibility:** The software enables organizations to harness the virtualization benefits of cloud without having to invest in new skills for cloud and modern application management.

- **Holistic approach that includes software and services:** UniKix is a solution owned by NTT DATA. Organizations can take advantage of having both the UniKix product and NTT DATA application services. Along these lines, companies can leverage the benefits of not only implementing UniKix but also utilizing NTT DATA's application modernization services and client experiences to address modernization challenges.
- **Partner ecosystem choice:** In addition to having the option to utilize NTT DATA services for UniKix setup and implementation, organizations also can also tap into UniKix's coalition of certified technology and services partners to select the right services partner of choice.

Key aspects of UniKix's value proposition center on:

- **Faster transformation time and business value:** By rehosting and simplifying modernization initiatives by retaining existing application architecture, organizations can achieve business transformation and benefits from cloud more quickly.
- **Cost reductions:** Utilizing UniKix to rehost mainframe applications on the cloud helps organizations save expenses on compute and license costs. Organizations that utilize UniKix have generated cost savings of 50%+, according to NTT DATA.

Challenges

Frequent and swift changes in business and technology environments are placing greater pressure on service providers to perform exceptional service delivery. Similarly, client expectation levels on application services performance have elevated. IDC's research has found that application environments for development, testing, and production are growing more complex. They are becoming highly federated infrastructure environments and extending from on premises to host based to hybrid clouds and edge computing. These dynamics have created new challenges for service providers to address.

NTT DATA must not only ensure application functionality and performance amid varied hosting and infrastructure environments but also be prepared to help clients protect against cybersecurity threats as well as address security weaknesses that more complex infrastructure and hosting environments may pose.

Application services providers such as NTT DATA that continually invest in their solution offerings to span a wide range of application development and management disciplines stand to build and gain competitive advantages.

Conclusion

IDC's research has found that organizations expect to lean upon their mainframe applications more in the future as key engines to power enterprise operations, customer intimacy, and innovation. Through transforming and modernizing mainframe applications, enterprises can position themselves better to achieve business imperatives and enhance competitiveness. IDC expects that application modernization will continue to grow in importance over the next several years as organizations seek to drive higher levels of business value and business agility from their IT investments and tools. To ensure modernization efforts lead to successful business outcomes, IDC believes enterprises can take advantage of lessons learned from other organizations' experiences.

Through transforming and modernizing mainframe applications, enterprises can be better positioned to achieve business imperatives and enhance competitiveness.

Businesses should:

- **Ensure there's a rigorous business case behind modernization:** Organizations must accurately evaluate how technology transformation will impact business users and business processes. Quite often, technology change affects how business operations are carried out. Enterprises need to understand how technology change impacts activity costs as well as productivity. From measured assessments of business impact, organizations can better predict anticipated outcomes from transformation to understand cash flow impacts that modernization efforts are likely to generate.
- **Spend more time addressing management areas such as process, strategy, and people:** In nearly 30 interviews, IDC found that application modernization success doesn't rely largely on technology deployment and replacement. Instead, successful organizations had to develop comprehensive modernization initiatives that linked technology upgrades to business value as well as process, change management, and cultural transformation. Interview feedback indicated that technology change was the easy part of the journey. Devising long-term application strategies, ensuring modernized applications generated business value, evolving IT and business culture, and implementing communication plans and effective change management were where organizations tended to run into challenges, which required management to spend more time on ensuring modernization value was captured.
- **Perform regular modernization postmortems:** Reviewing the strengths and weaknesses of each modernization effort surfaces key lessons for future initiatives and management. Establish a mechanism for capturing and applying lessons learned to fine-tune approaches for future transformation efforts.
- **Leverage change management best practices to backstop application modernization initiatives:** Change management is extremely important to navigate modernization risks and ensure smooth transitions. Organizations IDC has interviewed have shared that establishing formal change management programs led by PMOs and supported by C-level executives helps drive modernization programs and projects and provide accountability. These help organizations adjust to and overcome impediments and make modernization initiatives impactful.

About the Analyst

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Pete Marston is research director for IDC, responsible for the Worldwide Intelligent Application Services practice. He develops research focused on modern application delivery and the life cycle of application services markets, which include custom application development (CAD), testing, application management (AM), also referred to as application development and maintenance (ADM), and hosted application management (HAM). Key areas of Peter's research investigate the impact that DevOps and agile application delivery services have on enterprises, as well as how service providers help enterprises transform their business through application modernization and migration services.

IDC Custom Solutions

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