CLOSING THE DIGITAL-FIRST OPERATIONS GAP: UNITING ITOPS, CLOUDOPS, AND DATAOPS

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Organizations Are Aggressively Moving to Become Digital-First

According to a worldwide IDC survey of CEOs in 2022, 95% are pursuing or embracing the idea of a "digital-first" strategy for their organizations. That means they are moving beyond looking at digital transformation primarily as an engine for the creation of new products, services, and customer experiences, to also using it to reinvent internal business processes, decisions, employee experiences, and partner and supplier relationships. In the same survey, 73% of CEOs told IDC they planned to accelerate or sustain investments in digital initiatives.

After so many years of organizations pursuing digital transformation work in a silo focused on business innovation, it makes sense that organizations are finally widening their horizons. However, there are critical technology challenges lying just beneath the surface of these strategies of which CEOs are likely not aware — but which will fall squarely in the laps of CIOs and CTOs to address.

This is because the success of shifting to a "digital-first" strategy depends upon taking the digital tools and practices that have been until now primarily focused on business innovation, often inside organizational silos, and blending them with established IT tools and practices that have historically underpinned and enabled existing "business as usual" operations.

AT A GLANCE

KEY TAKEAWAYS

Organizations are aggressively moving to embrace the idea of being "digital-first" — seeing digital technologies as underpinnings not only for products and services, but also internal processes, decisions, and employee experiences.

Digital-first strategies can only succeed with the right business technology platforms underpinning them, but organizations are at risk, because today's enterprise technology environments, resources, and skillsets are invariably complex and siloed.

Digital-first strategies demand streamlined, responsive technology operations underpinning digital products, services, processes, and decisions — but too many of these operations are either not automated at all or are automated tactically through system-level scripts that are difficult to track and maintain — "dark automation".

Modern application and data orchestration platforms promise to resolve these challenges, not only standardizing and unifying automation approaches, but also providing visibility and transparency of operations.

Both worlds — digital and traditional IT — have advantages. When used well, digital tools and practices support high levels of delivery speed and agility; and when used well, traditional IT tools and practices support high levels of security, reliability, and scalability. Blending these worlds to gain the best of both means two things: firstly, that digital tools and practices need to be scaled and often formalized in ways that makes them fit for delivery in the context of enterprise operations; and secondly, that more traditional IT tools and practices need to evolve to support wider participation and faster delivery and change cycles.

To deliver on a digital-first strategy, this blend of digital and traditional IT approaches comes together in the concept of a unified business technology platform that creates continuous feedback loops of digital action and insight across digitized products, services, and experiences; as well as the decisions and processes that underpin them (see Figure 1).

FIGURE 1

The Shift to Digital-First Depends on Continuous Feedback Loops of Insight and Action
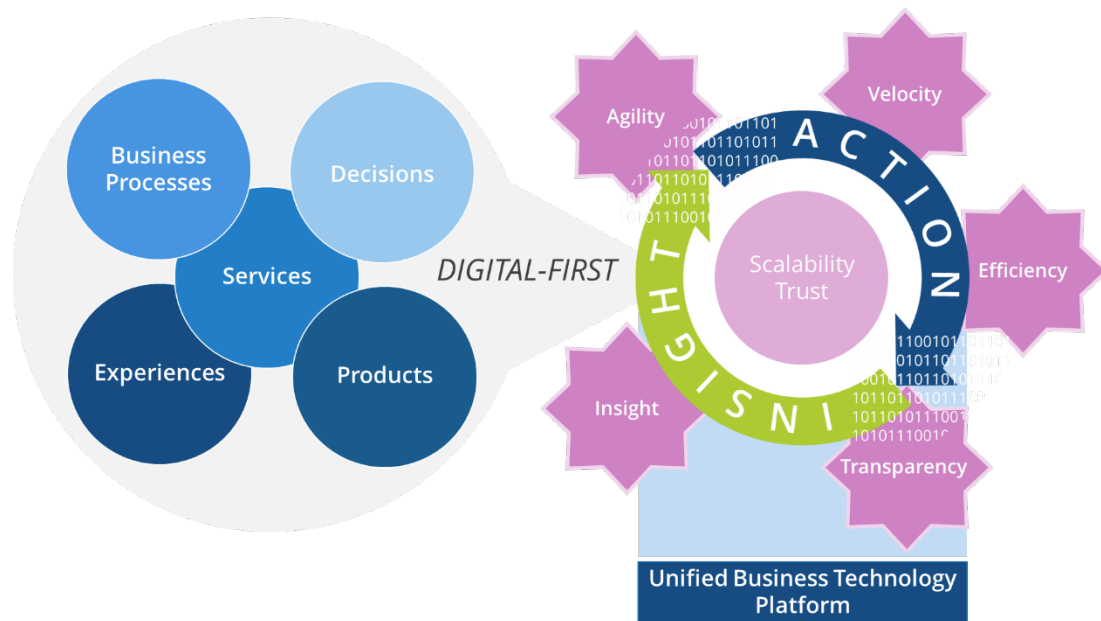
Source: IDC, 2023

These business technology platforms must deliver a blend of qualities that leverages the "best of both" of digital and traditional IT approaches — velocity, efficiency, transparency, insight, and agility — on a foundation of scalability and trust.

Clearly, attempting to stitch such a platform together from disparate, heterogeneous components using manual labor is akin to trying to build a 21st century office complex on sand. Automation must be at the absolute heart of your efforts to blend the best of digital and traditional IT tools and practices and create a modern, fit-for-purpose business technology platform.

However, many organizations are in a tricky spot: they struggle with technology operations that, even where teams have been able to automate, must work across complicated collections of tools and stacks. In the context of a digital-first strategy, "quick fix" approaches to automation create real problems. A strategic approach to automation that strives for scalable long-term value is critical.

Challenges of Making the Digital-First Platform Vision Real: Complexity, Silos, and Dark Automation

A strategic approach to automation is vital to address three significant automation challenges that organizations face in the shift to digital-first: environment complexity, automation silos, and "dark automation."

Environment Complexity

As any enterprise technology specialist or leader with significant experience knows, it is relatively rare for technology to be completely retired from an enterprise. Organizations commonly

provide homes for systems and applications that have been in use for 20–30 years, or even longer. As successive technology waves have reached further into and across business functions and enterprise boundaries, though, the complexity challenge faced by those wanting to automate operations has become about much more than simply dealing with legacy and variety. There are four dimensions in play:

- **Applications, data management technologies, and infrastructure platforms**. Organizations are struggling with ever-more diverse populations of elements within their technology stacks. Even just looking purely at the burgeoning variety in SaaS applications: IDC's large-scale SaaSPath 2022 survey showed that over 50% of organizations currently use more than 50 SaaS applications, and around 32% use 100 or more. Evidence of the challenge abounds here. For example, in an IDC survey from 1Q22, the most commonly cited barrier to achieving digital resilience was "the cost and complexity of supporting multiple generations of infrastructure and applications."

- **Compute and storage locations and operating models**. As investments in public cloud services continue to rise strongly, organizations nevertheless continue to invest in other models. We live in a multicloud, hybrid world that is becoming more, not less, complex. IDC's large-scale CloudPath 2022 survey showed that in addition to pushing forward with IaaS, PaaS, and SaaS usage, 57% of organizations leverage private cloud implementations; 35% leverage managed private cloud services; and 23% continue to maintain "traditional" on-premises infrastructure. Again, evidence of the challenge that stems from this complexity is plentiful. In a late 2021 IDC survey, 63% of EMEA organizations highlighted that simplifying and unifying the way they manage and secure on-premises and cloud infrastructure is critical to improving business resilience.

- **Supported business products and services**. Modern technology stacks support more business products and services than ever, and investment (and ROI) are being driven from more places than ever within organizations. As digital transformation has continued to play out, one result has been a major shift in the dynamics of technology investment and decision-making within organizations. Where IT departments used to control, or at least orchestrate, most IT investment, now the picture is very different — more than 50% of IT spending, on average, is controlled by business functions. A major challenge arising from this is that understanding the relationships between technology service performance and business product/service performance has become more important than ever, but also more difficult than ever.

- **Stakeholders**. The dispersion of ownership over technology investments and outcomes also means that platform health, performance, and cost are important to greater varieties of stakeholders than in the past. More people care about operational platform qualities than before, and fewer of those people have technical backgrounds than before.

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Automation Silos

As we have already discussed, organizations know that they cannot realize the value of investments in digital capabilities, or progress towards a digital-first future, without automation. However, automation efforts typically progress in the context of organizational silos, even within IT, digital, and data teams:

- **IT teams managing on-premises infrastructure, data and applications** leverage established IT automation and configuration management (ITACM) tools to orchestrate and automate administrative activities and workflows.
- **Teams responsible for managing cloud infrastructure** and supporting digital investments are building out parallel practices to orchestrate and automate the administration of IaaS and PaaS services (CloudOps). The leading public cloud platform providers all offer their own basic management tools, and specialist vendors providing more sophisticated, but still cloud-specific, automation tools are also enjoying fast growth.
- **Teams responsible for supporting data, analytics, and AI projects** are building out parallel practices to orchestrate and automate the administration of data ingestion, preparation, transformation, movement, and integration, as well as life-cycle management of data, analytics, and ML models (DataOps). Again, a number of specialist vendors providing automation tools positioned as being uniquely capable in support of DataOps are growing fast.

Automation is all about reducing manual effort, of course, but all these automation tools need to be used by trained experts. That means the replication of capabilities across silos creates a need to develop skilled teams that are also replicating efforts. Access to skilled talent is frequently cited as a major barrier to progress in digital transformation and digital-first strategy. Just one recent example comes from an IDC survey from mid-2022, which found that the second-most cited pressing operational challenge of a multicloud strategy in EMEA was "ensuring adequate IT staff, talent, and skills availability."

Dark Automation

Overall, automation penetration in organizations is significant and growing. 19% of organizations say they use automation and orchestration technology extensively across their technology landscapes. However, a significant majority of organizations either use these technologies only to a limited extent or they do not use them at all. Even where organizations are moderately mature in their automation efforts, they often rely on unmanaged collections of operating system-level automation scripts that are maintained by individual contributors.

System-level scripting is seductive: scripting interfaces are widely available, basic scheduling and logging capabilities are universal and free within common operating environments, and administrators are invariably skilled in creating such scripts at some level.

However, system-level scripts too often represent "dark automation"; they are not easy to track, their life cycles are often unmanaged, change and execution permissions can be set inconsistently, and their effects are not always well monitored.

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A strategic approach to automation must bring automation "into the light" — bringing the very qualities that organizations need from their platforms (velocity, efficiency, transparency, insight, agility, scalability, and trust) to the automation technologies that they use.

The Benefits of Modern, Unified Automation and Orchestration

Organizations do not have to struggle with dark automation, technology operations silos, and complex environments that are impossible to wrangle to fit the requirements of digital-first strategies.

Modern application and data automation and orchestration platforms can help to address all these challenges, by providing the following capabilities:

- **Visual design and monitoring of automated activities and workflows**. By enabling automation designers and administrators to work in a visual environment, the low-level details of automations are kept separate from higher-level designs, making it easier to quickly build, maintain, and understand automations and workflows.
- **Consistent execution of automations across technology stacks and operating models**. By providing suites of platform- and technology-specific agents that work consistently to execute and monitor actions across wide ranges of environments (operating systems, database management systems, application stacks, cloud environments, and more) one centralized platform creates one shared "version of the truth" and helps bridge technology and operating model administration silos.
- **Centralized automation life-cycle management and governance**. By storing and versioning all automation and orchestration definitions in one place, teams dramatically reduce the complexity of managing automations and workflows over time. Some automation and orchestration platforms also enable automation and workflow definitions to be represented and stored as code, which can then be externally managed in concert with broader CI/CD pipelines and so be seamlessly embedded into broader DevOps practices.
- **Visual reports and dashboards for non-technical stakeholders**. By providing one central place where both detailed monitoring and higher-level health and performance visualizations can be made available universally through web UIs, professional technologists and non-technical stakeholders can engage with and share one version of the truth, but at levels of detail and abstraction that are most appropriate for them.
- **Open extensibility**. By providing toolkits to enable customers and/or implementation partners to create their own custom connections to applications or technology stack elements that are not supported out-of-the-box, customers can bring uncommon niche or legacy technology environments under management alongside other strategic environments — again, using one common set of design, monitoring, and administration tools and creating one shared version of the truth.

Modern application and data automation and orchestration platforms deliver customers three main types of benefit from these capabilities:

- **Risks become much easier to manage**. In a late 2021 IDC survey, 63% of EMEA organizations highlighted that simplifying and unifying the way they manage and secure on-

premises and cloud infrastructure is critical to improving business resilience. By helping to erode skill and automation technology silos, modern automation and orchestration platforms enable good security, auditing, and governance practices to be applied consistently across technology environments and operating models. For example, IT operations teams can more easily cope with new change and modernization requirements stemming from digital-first strategies and deliver confidently on demanding operational SLAs that emerge as digital products and services and customers become directly connected to core systems.

- **Technical resources are freed up to work on higher-value activities**. According to an IDC survey from mid-2022, the second-most cited pressing operational challenge of a multicloud strategy in EMEA is "ensuring adequate IT staff, talent, and skills availability." By standardizing and abstracting away the complexity of defining and monitoring automations and workflows that work across technology environments and operating models, modern automation, and orchestration platforms, technical staff are able to deliver and maintain more consistent, higher-quality standard operations with much less effort. For example, data engineers can spend less time on nursing production environments, instead focusing on outcomes like increased data quality and shorter time to value for key projects.

- **Platform and infrastructure costs are easier to contain and tradeoffs are easier to understand**. IDC's 2022 CEO survey found that 50% of CEOs are either very or extremely worried about growth in cloud expenditure — a phenomenon fueled in part by the breadth of demand for digital technologies and applications across business departments. By not only automating operations that support aggressive cost management but also providing visibility into those operations, modern automation and orchestration platforms play a critical role in aligning spend with business value and helping senior leaders manage portfolios of digital investments.

BMC Technology Profile

Originally founded in 1980 by three Shell employees, BMC has always focused on delivering technology that helps organizations automate and manage their critical enterprise IT infrastructure assets. The company started out with a focus on automating and optimizing mainframe systems; now it offers similar value propositions across mainframe, distributed, and multicloud environments.

The company currently employs around 6,000 people worldwide, serving around 10,000 customers across communications, financial services, healthcare, manufacturing, retail, the public sector, and other industries. It operates from offices in 43 countries worldwide. IDC estimates BMC's 2021 worldwide revenue at $2.9 billion.

BMC has offerings that span multiple markets, though its IT Operations Management, IT Service Management, and IT Automation and Configuration Management offerings are the most widely used. This report is primarily concerned with BMC Helix Control-M, which is the company's modern automation offering built from the industry-leading Control-M self-hosted solution, relating to IT Automation and Configuration Management, and part of its Helix family of products.

BMC's Helix strategy was initiated in 2018, and has seen BMC create as-a-service, cloud-based products that operate across on-premises and multicloud environments for all its core markets: IT Service Management, IT Operations Management, and IT Automation and Configuration Management.

In line with the broader Helix promise, BMC Helix Control-M (first launched in December 2020) is delivered as-a-service by BMC, and it can orchestrate and automate administration actions across on-premises and distributed environments, as well as infrastructure services and application stacks running on AWS, Azure, and Google Cloud Platform. It does this by leveraging agents that are installed on all relevant target platforms; each platform-specific agent is then provisioned with specific plugins (that, for example, enable automation of actions against a particular database system, security module, or file system). Where BMC does not provide pre-built plugins, clients or consultants can develop their own custom plugins using a provided application integration toolkit.

Helix Control-M's automation and orchestration capabilities are particularly focused on three different but related digital operations process domains:

- **Data pipelines**. Helix Control-M can orchestrate data ingestion, movement, integration, preparation, transformation, and loading across on-premises and cloud-based data warehouses, data lakes, BI, and analytics tools, working across platforms including Apache Airflow, DataBricks, Apache Spark, Google Dataflow, Snowflake, and Amazon Redshift.
- **Application workflows**. Helix Control-M can orchestrate application, database, and server operating system operations across on-premises and cloud-based environments including AWS, Azure, and Google Cloud Platform.
- **File transfers**. Helix Control-M can manage file transfers across on-premises environments, AWS, Azure, and Google Cloud Platform via FTP or SFTP, and can encrypt and decrypt files on transfer and recover from failures seamlessly.

Helix Control-M provides facilities to help technology and management stakeholders across the whole span of the digital operations process life cycle through three specific "domains" of functionality:

- **Automation design**. The Planning domain of Helix Control-M enables customers to define automated scheduling and processing of workflows, which are sequences of individual jobs that execute at specific times with available resources, when specified prerequisites are met. When jobs need to be orchestrated together as workflows, they are grouped together and organized in folders, which manage the configuration and state of the jobs within them as they execute. Further, folders can be grouped together into applications to help with organization. Critically, customers can either use a graphical drag-and-drop environment to specify jobs and workflows within folders, or they can directly create or customize the JSON scripts that act as the internal representation of those jobs and workflows. This "jobs-as-code" concept also means that specifications can be managed within external source code management systems and CI/CD pipelines (instead of being managed within the product's

own internal version control system), making Helix Control-M a "good citizen" in the context of any customer's existing DevOps initiative.

- **Automation monitoring**. The Monitoring domain of Helix Control-M enables customers to visualize the health and performance of individual workflow instances in operation, as well as correcting errors and restarting flow instances that have failed for some reason. A "service" view enables less technical stakeholders to visualize the operational health and performance of workflows in the context of defined SLAs.
- **Automation configuration**. The Configuration domain of Helix Control-M enables technical administrators to install, view, and change the configuration of agents and plugins in the customer's Helix Control-M environment.

BMC Helix Control-M is typically licensed based on the number of executions.

Challenges

Although BMC has a long and strong heritage as a provider of IT automation and configuration management (ITACM) software and is currently the third-largest provider in this market worldwide, according to IDC, newer and smaller startups and scaleups are currently garnering outsized attention in the market. Although these newer and smaller players are nimble, and in many cases able to demonstrate a significant degree of customer value quickly, most do not have the scope of application or proven scalability that BMC has. Nevertheless, the company needs to continue to work to demonstrate and build on its modern platform credentials with Helix and show how customers both old and new can reap the rewards of Helix Control-M.

Conclusion

With 95% of CEOs pursuing or embracing the idea of a "digital-first" strategy for their organizations, technology teams and leaders are under pressure to implement and support integrated business technology platforms that embody the best aspects of digital tools and practices — delivering velocity and agility — and the best aspects of traditional IT tools and practices — delivering scalability, reliability, and security. Automation must be at the heart of these efforts, but tactical approaches to automation are not enough. Technology environments are too complex, siloed, and dispersed, for one thing. A strategic approach to automation and orchestration, which standardizes and integrates automated operations as well as providing operational visibility and transparency, is required. If it can address the challenges presented above, BMC is in a strong position to lead in this opportunity, and support organizations in bridging the digital-first operations gap.

MESSAGE FROM THE SPONSOR

By simplifying application and data workflow orchestration, BMC Helix Control-M makes it easy to build, define, schedule, manage, and monitor production workflows, ensuring visibility, reliability, and improving SLAs. BMC Helix Control-M provides the benefits of SaaS consumption, while delivering deep operational capabilities, speed, security, and governance required for an organization's digital-first strategies. Provide your developers, data engineers, business users, and IT Ops teams freedom to drive modernization initiatives forward within an automation and orchestration framework that's robust, flexible, and secure enough to ensure operational excellence in production and at scale.

About the Analysts

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Neil Ward-Dutton is vice president, AI and Intelligent Process Automation European Practices at IDC. Prior to joining IDC, Neil was Founder and Research Director of MWD Advisors, a technology advisory firm focusing on digital technologies and their impacts on business. Neil is recognized as one of Europe's most experienced and high-profile technology industry analysts, and has regularly appeared on TV and in print media over his 20-year industry analyst career as well as authoring over 10 books on IT and business strategy.

Neil initially studied and trained as a software engineer, and holds a BSc in computer software technology from the University of Bath. He is also a Fellow of the RSA (Royal Society for the encouragement of Arts, Manufactures and Commerce).

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