White Paper

Creating a Competitive Advantage Through IT Automation

Sponsored by: Dell Technologies and Intel

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IDC OPINION

As organizations undergo their digital transformation (DX), the increase in requirements, expectations, and business demands shifts IT automation to a necessary asset. IT automation not only relieves IT departments from overwhelming demands, but when implemented correctly, it also can aid an organization in its drive to gain a competitive advantage by supporting new business initiatives and product development, uncovering new opportunities for growth, and enhancing customer experience. IT automation can be a catalyst for evolving IT from a cost center to a center of innovation. IDC research suggests that organizations further along in their IT automation journey are already benefitting from their IT automation investments.

Some of the recognized benefits quoted by IT leaders are:

- Relief from overwhelming business demands
- Increased business productivity
- Improved IT efficiencies for service delivery
- Focus on innovation to gain a competitive advantage
- Accelerated time to market
- Improved team collaboration, productivity, and morale
- Increase in the organization's security posture

IDC believes that IT automation offers organizations the opportunity to optimize the use of existing staff, processes, and technologies to drive efficient operations and sustainable competitive advantage. Extensive IDC research indicates:

- The more an organization automates, the more it benefits. Organizations with lower levels of IT automation are less likely to see outcomes related to business innovation such as increased number of products and services or decreased time to market for new products, as well as service quality improvements related to IT infrastructure reliability, IT staff productivity, and IT security.
- Autonomous IT operations are mostly self-funding. Funds saved through IT automation are reinvested in further automation or redirected to other IT projects.
- Employee recruiting and retention are facilitated by increased autonomous operations.

To adequately measure the overall benefits of IT automation, organizations must consider both tangible business outcomes and less tangible (i.e., soft and hard costs) IT outcomes. While business outcomes such as increased profit and decreased costs are easy to identify and link to the success of the organization, IT outcomes are more discreet but add value to the organization's ability to digitally transform and gain a competitive advantage.

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METHODOLOGY

This white paper discusses the findings of a research study commissioned by Dell Technologies and Intel. The study sought to determine the quantitative and qualitative advantages and business value of IT automation across various adoption levels. For its analysis, IDC relied on results from a web survey of 1,100 IT decision makers and VPs at medium-sized, large, and very large organizations (defined in terms of the number of employees) familiar with the business and technical impacts of IT automation of servers; enterprise storage systems; private/hybrid cloud; data protection, security, and compliance; converged/hyperconverged infrastructure; and networking. This analysis also incorporates empirical data obtained via in-depth interviews with 10 organizations at various stages of IT automation adoption. In addition, IDC's observations, insights, and recommendations are based on six decades of research and intelligence on the IT infrastructure and operations industry and related automation capabilities and practices from IT organization advisory inquiries.

SITUATIONAL OVERVIEW

To survive and grow in the increasingly digital world, organizations must transform their operations at an unprecedented pace and scale. IDC estimates that in 2022, more than half of the global economy will be based on or influenced by digital (see *IDC FutureScape: Worldwide Digital Transformation 2022 Predictions,* IDC #US47115521, October 2021). Further, IDC's *Future Enterprise Resiliency and Spending Survey* shows that during the past year, nearly half of the organizations accelerated their digital transformation (DX) initiatives compared with their pre-pandemic plans. By the end of 2024, direct DX investments are expected to account for the majority (55%) of all ICT investments (the acquisition of equipment and computer software that is used in production for more than one year), growing at a compound annual growth rate (CAGR) of 16.5% from 2022 to 2024. Organizations that successfully make this transition are demonstrating a competitive advantage as they scale business models and enable intelligent innovation through efficient and effective business services.

With the push for organizations to transform digitally also comes a deluge of digital transformation requirements and expectations that place additional strain on IT department resources. IT leaders interviewed by IDC noted:

> "*It is typically the issue where you have less work and more people, but we had the other problem at hand. We had more work and not the right amount of people.*"
>
> "*We've always had a quite a small team … and probably two years ago, we noticed that the demand from the rest of the business was just overwhelming.*"
>
> "*We have a lot of turnover, and we needed a way to automate getting those users created and managed with only myself and then one person who backs me up when I am on PTO. We have 3,000 turnovers every year. It's not feasible to do it manually.*"

When implemented correctly, IT automation enables organizations to distribute IT resources and augment employees more effectively, providing IT departments with relief from overwhelming business demands. Staff formerly used to perform manual, repetitive tasks can be retrained and redeployed to other areas of the business to add value. Long term, IT automation enables IT departments to focus on intelligent innovation, instead of sustentation, as a means of gaining a competitive advantage.

For business executives who view IT departments as cost centers, business outcomes (i.e., improved revenue and profit as well as decreased costs) are the motivating factors for determining IT budgets. By emphasizing financial metrics, the implementation of IT automation can appear to be redundant in both efficiency and cost:

> "*I am already paying someone the salary to do it. Why should I pay more in technology to do it?*"

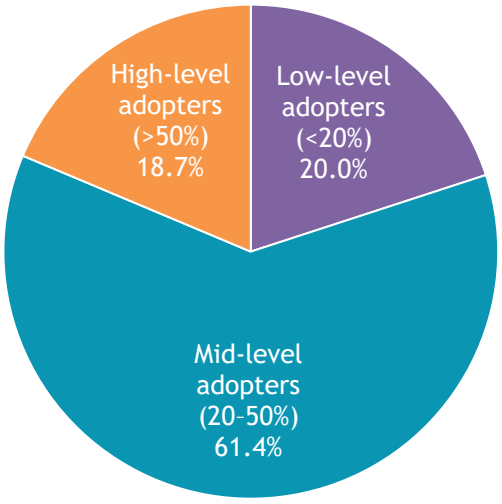
However, for digital businesses, the technology architecture is the business architecture, aligning revenue growth with customer experiences. These businesses realize that IT automation offers the opportunity to optimize the use of existing staff, processes, and technologies that drive efficient operations and sustainable competitive advantage. Models that enable speed and high performance, such as Agile, DevOps, and site reliability engineering (SRE) practices, can transform the way IT organizes and utilizes automation. By automating processes, IT organizations can deliver faster service, increased agility, and end-to-end integrated process visibility that drive measurable, consistent, and more secure business outcomes. To improve business value, influential decision makers should consider additional factors that measure IT efficiency, productivity, and innovation when contemplating IT automation.

IT Automation Results in a Competitive Advantage

Using a model that accounts for the breadth of automation implemented and the level of automation achieved, IDC consistently finds that IT automation improves business benefits for all organizations. Yet it is still early in the automation journey, with the majority (81.4%) of organizations having automated less than half of their IT operations (see Figure 1).

FIGURE 1

Prevalence of IT Automation Adoption



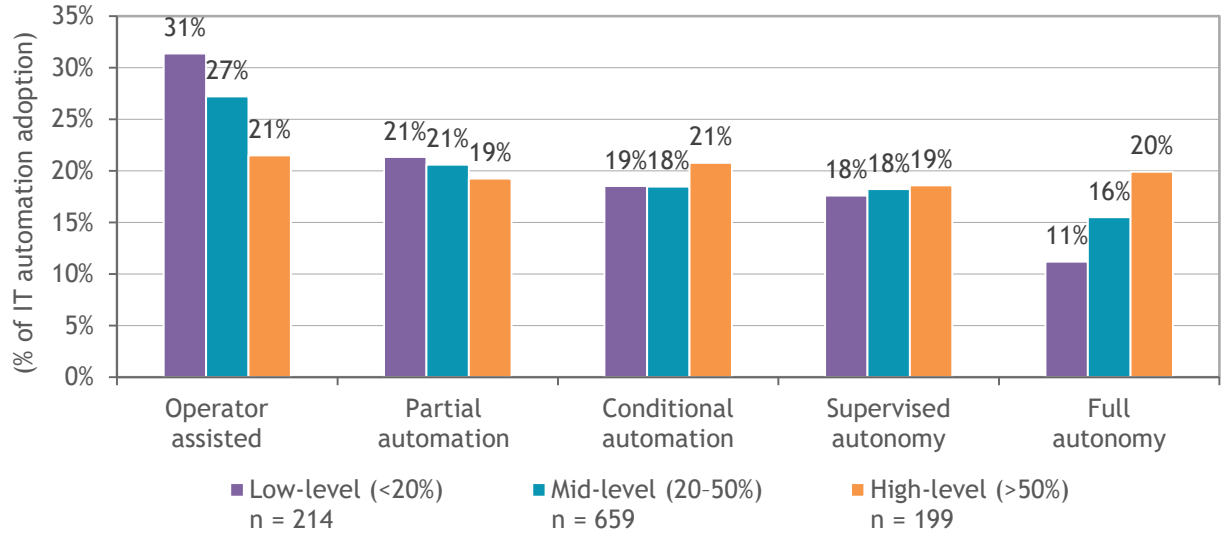
n = 1,100 respondents

Source: IDC and Dell Technologies' *IT Automation Research Survey,* September 2021

Many organizations fall into the trap of viewing their IT departments as cost centers that contribute to the overall operational expense but provide little business value. For these organizations, investing in automation is not a priority, delaying the progress of their automation journey. As a result, IT departments within these low-level adopters (defined as organizations with <20% of their IT operations automated) tend to focus their efforts on automating business operations like R&D to build a business case made up of immediate tangible business outcomes. Using this approach, low-level adopters can implement "more things that benefit the users more than just IT." In doing so, IT departments hope to "… make people feel it" (the benefits of IT automation) as a means to develop organizational buy-in. However, this approach also limits the types of automation that can be implemented. This group reported more usage of operator-assisted and partial automation, both of which are less advanced automation approaches that involve more human interaction (see Figure 2).

FIGURE 2

IT Automation Adoption Level by Maturity Level



Source: IDC and Dell Technologies' *IT Automation Research Survey,* September 2021

Using a business case approach, organizations were able to realize a number of immediate business outcomes. For example, 35% of low-level adopters observed increased profits, 32% noticed improvements in customer satisfaction, 31% saw an increase in employee productivity, 29% recorded increased revenue, and 27% were able to reduce operational costs.

On the other hand, organizations that view their IT departments as a means of gaining a competitive advantage can gain even more from automating IT operations. As noted by IT leaders:

"*Companies that automate, that can deliver fast, can definitely get an edge over others.*"

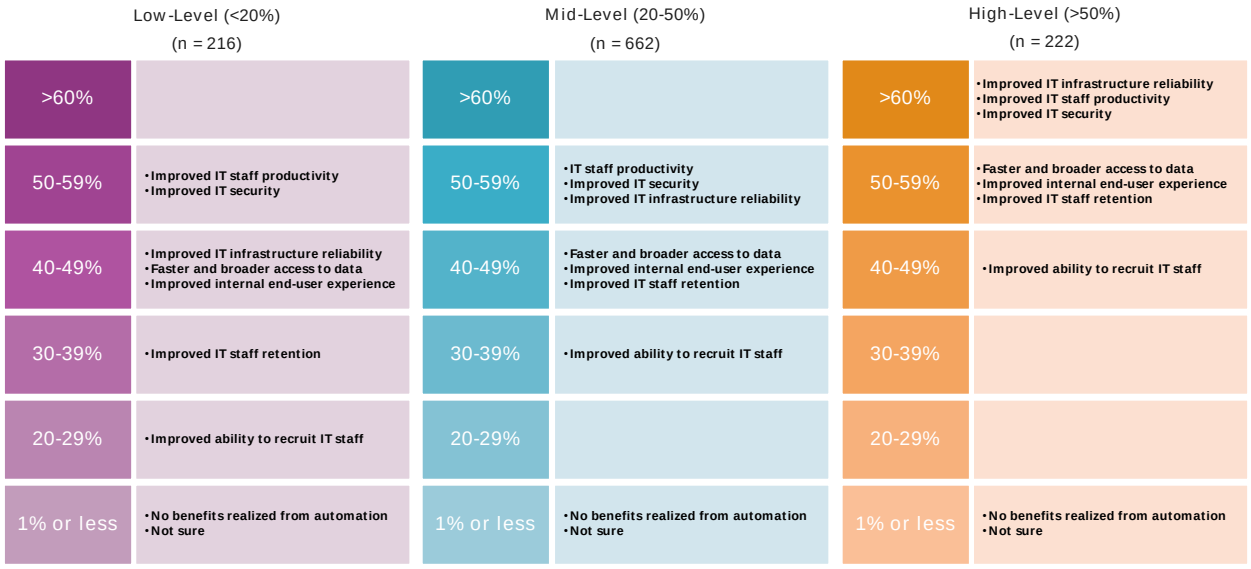
IDC findings show that a third of organizations that have increased the amount of automated IT operations to a mid-level range (20–50%) continue to improve business outcomes and can also achieve improved IT efficiencies, which enhance IT workflows. By automating more IT-centric operations, organizations are able to greatly reduce the number of manual repetitive tasks for which

IT staff are responsible. By using IT automation to improve IT efficiencies and workflows, a higher percentage of mid-level adopters (compared with low-level adopters) report improvements in less tangible outcomes such as improved staff productivity, IT security, and infrastructure reliability (see Figure 3).

FIGURE 3

IT Benefits Realized from IT Automation by Adoption Level

Q. Which of the following benefits, if any, has your organization realized by automating operations?



Source: IDC and Dell Technologies' *IT Automation Research Survey,* September 2021

Perhaps the largest benefits resulting from IT automation are among organizations that view IT departments as centers of innovation essential for creating business opportunities and business transformation. Categorized as high-level adopters, these organizations report automating over 50% of their IT operations to "sharpen, accelerate, and simplify" both IT and business processes that result in business innovation:

> "*A lot of times human error is the cause of our issues. So automation allows us to decrease downtime and also makes it easier for us to scale up and down very quickly.*"

By increasing IT automation to more than 50%, the same number of high-level adopters realized the same gains in business outcomes as reported by both low- and mid-level adopters (i.e., improved employee productivity – 32%, increased profit – 23%). Yet significant differences were observed with regard to gains related to business innovation. For example, about a quarter (22%) of high-level adopters experienced an increase in the number of new products and service offerings and a decrease in time to market for new products. More of these organizations also reported improvements to customer satisfaction (41%), customer retention (23%), and new customer acquisition (19%). Comparatively, less than one-fifth of low-level adopters and about one-fifth of mid-level adopters reported the same improvements.

More IT automation also results in more service quality improvements. A larger percentage of high-level adopters report not only improvements in IT efficiencies, as demonstrated in Figure 3, but also increased rates of improvement among KPI metrics. For example, after implementing IT automation among server systems, high-level adopters experienced the following rates of improvement:

- New service development (81%)
- Capex utilization (78%)
- Opex utilization (76%)
- Non-IT staff productivity (82%)
- IT staff time on routine tasks (79%)
- System/app downtime (78%)
- Resource per admin ratios (79%)
- Resource utilization (74%)

Comparatively, the rates were significantly lower for low- and mid-level adopters: in the 30–40% range for low adopters and in the 55–65% range for mid-level adopters.

Further, automating more than 50% of IT operations frees up IT staff. Instead of reducing head count, these organizations use this as an opportunity to retrain and redeploy staff so that they can focus on innovative tasks that bring value to the organization. As noted by one respondent:

> "*We value that investment we've made in employees, and we recognize that. That investment in terms of time in training and being a part of the organization is valuable, so we want to make sure we maintain and keep and groom those that are successful to go elsewhere.*"

While some organizations may not view retraining and redeploying staff as a cost savings, it can be considered a cost deferment in terms of not having to hire and train new staff.

Overall, these findings indicate that after implementing IT automation, organizations experience business and IT improvements. The more IT operations that are automated, the greater the gains for the organization overall. Due to the already recognized benefits, all IT automation adopters surveyed suggest that future automation initiatives will better align business and IT expectations for even larger competitive gains.

Depth and Breadth of Autonomous IT Operations

Organizations everywhere are still sorting out their automation strategies, which can be characterized into five distinct levels of human involvement, tool adoption, and targeted outcomes:

- **Operator assisted:** System is driven by both scripted and manual actions; human input is required for all operations.
- **Partial automation:** System uses rules-based decision making to achieve explicit outcomes; system is dependent on humans for all input and intervention.
- **Conditional automation:** System uses inferred decision making to achieve generalized outcomes, including insights, recommendations, and actions; system can handle most operations, with some exceptions without human intervention. Organization develops formal automation strategy, and automation spans organizational silos, typically driven by a dedicated automation team with data scientists.

- **Supervised autonomy:** System automatically takes action to achieve service-level objectives. Automatic alignment with these outcomes is expected. System can handle all operations, with few exceptions without human intervention.
- **Full autonomy:** System automatically takes action to align with organizational priorities. Automatic alignment with these priorities is expected with or without human input. System can handle all operations (no exception) without human intervention.

The further along an organization is on its automation journey, the more likely it is that multiple levels of automation and automation tools will be deployed across the IT environment and among organizational teams. Yet the magnitude of implementation varies, with more advanced technologies being adopted more prevalently among high-level adopters. For example, of the small percentage (18.3%) of organizations that have risen to high-level adopter status, one-fifth (19.8%) have begun to shift their IT automation approach to full autonomy, the most advanced, nonhuman-assisted level of IT automation. Despite this transition, high-level adopters still rely on operator-assisted (21.5%), partial automation (19.6%), and conditional automation (21.0%) approaches, but in a more limited capacity than low- and mid-level adopters (see Figure 4). For these two groups, usage of the less advanced automation approaches ranges from a minimum of 18.5% for conditional automation (low- and mid-level adopters) to 31.4% for operator-assisted automation (low-level adopters). Only a small percentage of low-level adopters (11.2%) and mid-level adopters (15.5%) use full autonomy automation.

FIGURE 4

Distribution of IT Automation Approaches by Adoption Level

Q. What proportion of the systems you are aware of use each of these approaches to automate IT infrastructure?

	Operator Assisted	Partial Automation	Conditional Automation	Supervised Automation	Full Autonomy
Low-level (<20%) (n = 214)	31%	21%	19%	18%	11%
Mid-level (20–50%) (n = 659)	27%	21%	19%	18%	16%
High-level (>50%) (n = 220)	22%	19%	21%	18%	20%
All respondents (n = 1,093)	27%	21%	19%	18%	16%

Source: IDC and Dell Technologies' *IT Automation Research Survey,* September 2021

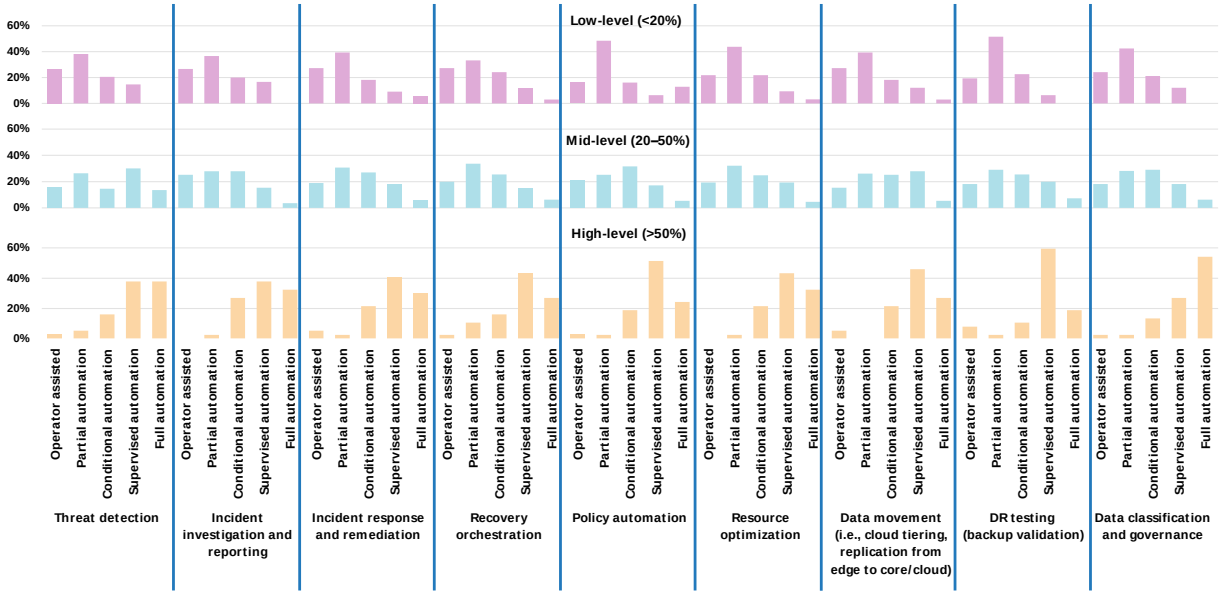
The IT automation approach adopted also differs depending on which IT infrastructure system domains and IT management elements organizations choose to automate. Organizations can implement and are implementing IT automation approaches across all infrastructure domains, such as servers; enterprise storage systems; data protection, security, and compliance; converged and hyperconverged infrastructure; networking; and private/hybrid cloud (breadth), and the relevant IT management elements within each domain, such as capacity planning, system setup, and monitoring (depth). Overall, low-level adopters automate about 30%, mid-level adopters about 60%, and high-level adopters about 80% of all IT domains. Among the specific IT management elements, all five categories of automation are used by all adopters.

However, low-level adopters use more operator-assisted or partial automation across all IT management elements, regardless of domain. The exceptions to this trend include data protection, security, and compliance, as well as converged infrastructure/hyperconverged infrastructure (see Figures 5 and 6). For these systems, the automation approach for low-level adopters is more likely to include partial and conditional automation compared with approaches used for other systems. In contrast, high-level adopters' automation usage is skewed toward the more advanced types of automation (i.e., supervised and full autonomy) across all IT management elements.

FIGURE 5

Distribution of IT Automation Adoption Across Data Protection, Security, and Compliance Infrastructure

Q. What is the most common level of automation for data protection, security, and compliance within each of these areas?



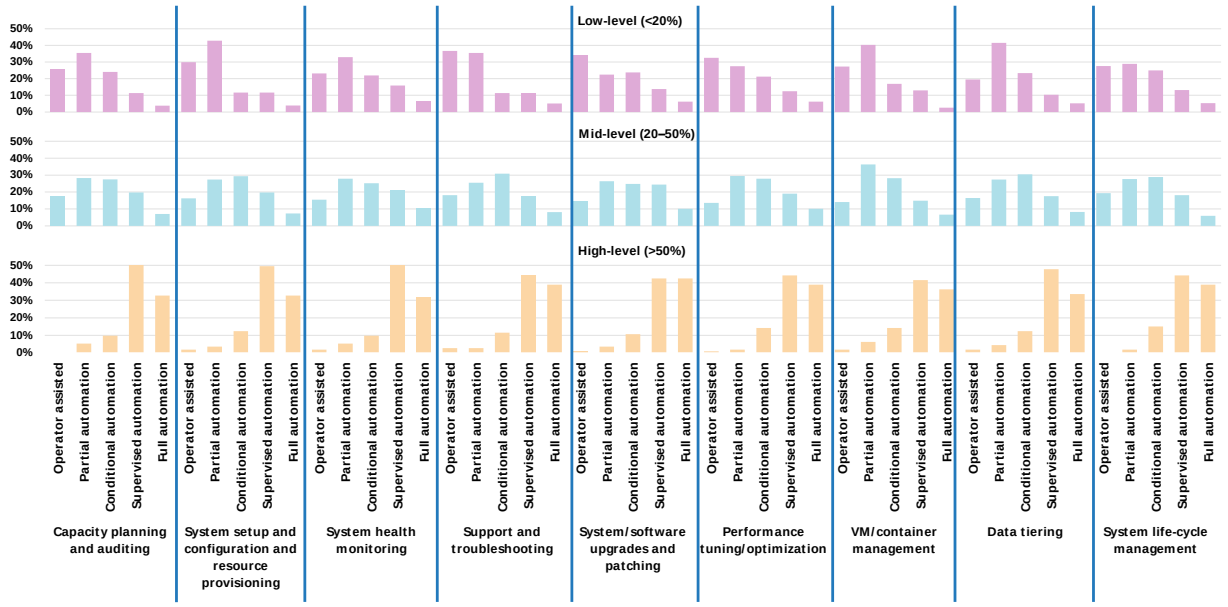
Base = 180 respondents

Source: IDC and Dell Technologies' *IT Automation Research Survey,* September 2021

FIGURE 6

Distribution of IT Automation Adoption Across CI/HCI Systems

Q. What is the most common level of automation for CI/HCI systems within each of these areas?



Base = 453 respondents

Source: IDC and Dell Technologies' *IT Automation Research Survey,* September 2021

To Compete, First Invest

Investing in IT automation is key for future competitiveness and business growth. Almost 90% of organizations surveyed are prioritizing this technology as their most important/critical investment over the next two years. Not surprisingly, those organizations experiencing the biggest gains, specifically high-level adopters (93.2%), are driving this trend for at least the near future:

> "*It's a critical priority for us because it allows us to deliver software faster and it allows us to innovate more quickly. We are number 2 in the market … but there are a lot of up-and-comers, smaller, nimble kind of vendors that are nipping at our heels. Because they are smaller and nimble, they can move quickly. This helps us stay ahead.*"

A similar percentage (90.5%) of mid-level adopters agree with this funding prioritization as they now recognize that IT automation can lead to a competitive advantage:

> "*It's a very high priority … our ability to scale our technology team was really a critical component to the success of that new product launch.*"

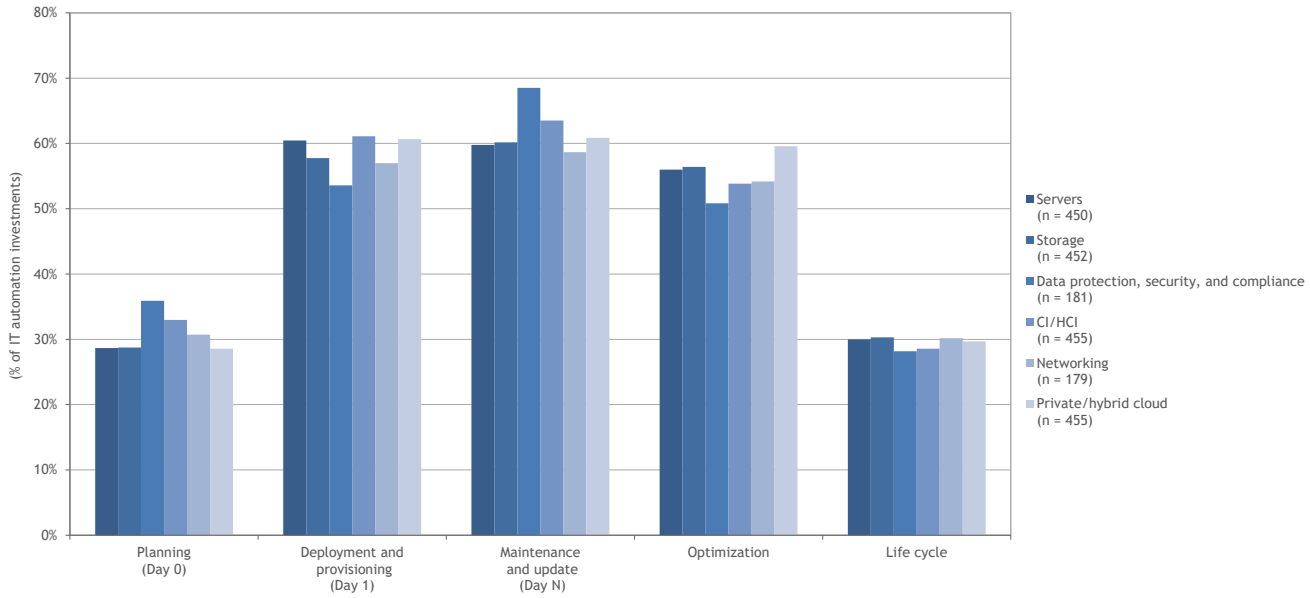
However, slightly fewer low-level adopters (81.9%) rank IT automation investments as high as their counterparts, reflecting their view of IT as a cost center:

> "*I wouldn't say it's number 1, but it is definitely in the top 3 or 4 on the list, especially due to growing demand from our business and with an increasing trend to kind of reduce infrastructure in IT service terms.*"

Regardless of how organizations rank IT automation investments, overall, IT automation budgets are expected to increase by an average of 12% and be used specifically for optimization, maintenance and update, and deployment and provisioning (see Figure 7).

FIGURE 7

Expected IT Automation Investments by System Function



Source: IDC and Dell Technologies' *IT Automation Research Survey,* September 2021

However, prioritizing IT automation as a critical investment doesn't necessarily mean increased share of spend. Organizations automating a higher percentage of IT operations (more than 20%) allocate less than one-fifth (17%) of their IT infrastructure budget to these initiatives. Comparatively, low-level adopters allocate 22.5%. Interviews with IT leaders indicate that this disparity is not necessarily due to lack of organizational funds but instead reflects IT automation's ability to be self-funding:

> "*We're probably spending in the area of 15% or more of our budget [on IT automation]. It goes to activities to help us automate, and then reinvest in the intelligence around what to automate and how to automate, and then how to be more efficient with it.*"

According to IT leaders, proportional increases to the IT automation funding are made possible due to freed-up resources made available through IT automation. Survey results corroborate these findings, with more than half of mid- and high-level adopters indicating that money saved from investing in IT automation is often reinvested into either a higher level of automation within the same area (55% of mid-level and 73% of high-level) or by expanding automation to other IT areas (51% of mid-level and 64% of high-level).

Organizations can also take an opportunistic approach with the money saved from IT automation by leveraging an upgrade or technology refresh. With this approach, over half of high-level adopters prioritize investments specific to infrastructure modernization (55%) or infrastructure consolidation (see Figure 8):

> "*…we've moved more to the automated builds and having traditional provisioned infrastructure and virtual machines that would have been managed and shut down manually and provisioned manually, that kind of thing. So we've probably removed 80% of the infrastructure we previously had and are now relying on the orchestrated infrastructure as code.*"

Infrastructure freed up by automation results in future cost savings. Instead of procuring new systems, organizations have found that existing systems that are no longer in use are now available for other uses. As described by one respondent:

> "*It's not so much about cost savings – it's cost deferment in terms of not having to purchase additional systems … where we can identify that there is infrastructure available, it's deferred. The cost savings comes in deferring costs that are going to be spent, a budget that is going to be spent. It's just that we can delay the expenditure for a little bit.*"

Automation that results in consolidation can also help organizations reduce their on-premises infrastructure footprint. This not only is ecologically friendly but also allows for easier business expansion by reducing the "brick-and-mortar footprint":

> "*Instead of providing on-premises servers at each and every location of our footprint, we just connected to a hub in APAC … if we hadn't automated a thing, then you'd have to look at it in a local, in a totally different aspect. Instead of three months, you would have taken nine months to open up a new office.*"

FIGURE 8

IT Infrastructure Consolidation Resulting from IT Automation

Q. Has your organization been able to reduce the number of hardware systems as a result of IT automation implemented in the following areas?

	Servers	Storage	HCI	Data Protection	No Reduction	Not Sure
Low-level (<20%)	40%	39%	42%	36%	15%	5%
Mid-level (20–50%)	47%	51%	44%	47%	10%	1%
High-level (>50%)	61%	54%	53%	49%	14%	0%

Base = 1,100 respondents

Source: IDC and Dell Technologies' *IT Automation Research Survey,* September 2021

Reinvesting saved money is a necessity for expanding IT automation initiatives, as well as preventing loss of unspent funds in future budgets, especially if the organization has established a "use it or lose it" budgeting system:

> "*It's a double-edged sword — if you didn't spend enough, that means you didn't budget appropriately. This means you have to go back and fine-tune. If you are overspending, you are not planning correctly.*"

Overall, the message is clear: For organizations to benefit the most from automation, they must reinvest money saved from automation for "… activities to help us automate, and then reinvest in intelligence around what to automate and how to automate and how to be more efficient with it."

END USERS' CONCERNS AND CHALLENGES

Automation is a required capability for driving speed, agility, and quality into the application development, deployment, and management life cycle. It creates predictability, reduces human error, and improves speed and quality for the business. It can also increase security as there is an expected, predictable outcome that delivers higher transparency for compliance, audit, and security requirements.

Organizations can be hesitant when considering IT automation, questioning why IT automation is needed when money is already being spent on people doing the same job. Similarly, IT employees ponder what IT automation means for career stability. Yet IT automation does not equate to redundancy or reduced head count. Instead, organizations that adopt IT automation are able to redeploy IT resources. Rather than lose valuable resources to manual, repetitive tasks, organizations can shift employees to perform more valuable tasks that help innovate. More specifically, automating more IT operations provides employees with more time to develop in-demand skills specific to IT automation or in other parts of the business:

> "*Sometimes, it's not actually about money savings. We get time back and we really don't have a time value of money in that situation. We spend a lot of time outside of IT automation in training programs to retrain our workforce to go into different areas.*"

> "*When people are 100% utilized, they don't have time to learn new things.*"

This not only moves the business forward but also provides value to employees.

In an increasingly tighter labor market, a higher share of organizations with higher levels of automation reported increased staff retention (17% of high-level organizations compared with 15% of mid-level organizations and 14% of low-level organizations) and recruiting ability. IT automation not only is good for the business but also provides value to the workers.

We can automate a lot, but we've hit a limitation with some of our products. Now, where we've gained confidence in those products, we're stitching some of the automation together.

Organizations are also hesitant about the ability for automation software to integrate different systems. Automation software is increasingly deployed with a defined set of business and technology objectives. As a result, IT departments implement automation software with the expectation that it can execute integrated actions across multiple software systems interfacing across business and technology processes. With this capability, organizations anticipate creating more efficient workflow processes. While some automation software spans multiple technology processes and IT silos (i.e., application development, infrastructure, operations), there are still integration limitations. When asked what would significantly improve their IT automation experience, organizations overwhelmingly noted a desire for vendors to include features that allow "more systems to be linked together" such as API hooks with cloud providers for full end-to-end transparency in terms of processes that are being automated. Otherwise, the only alternative is for organizations to use ad hoc "spaghetti code," which can result in errors further down the line.

Finally, IT departments with less experience and confidence report more hesitancy in adopting IT automation. For some organizations, this concern is alleviated by using automation experts and consultants to help guide the journey. Other organizations respond to this challenge by adopting automation tools that are integrated into platforms and infrastructure.

ESSENTIAL GUIDANCE FOR IT BUYERS

IT automation is a key foundational capability for modern applications and operations; the need to embed speed into the business and technology architecture has never been more acute. The continued push for digital (and business) transformation requires improved scale and agility as process and organizational complexity from multicloud adoption, advanced hardware solutions, new organizational models (i.e., DevOps, SRE, cloud centers of excellence), and modern application architectures pressures teams to move faster. When properly deployed and utilized, automation technologies enable competitive advantage by ensuring faster response times and decision making, more team collaboration, a reduction in manual tasks, and an ability to auto-remediate problems before they impact the customer experience, but only for those organizations that are ready to invest in technologies, people, and processes. Conversations with IT executives reveal that IT automation tools are often seen by business executives as a way to improve short-term business outcomes, with less interest for the long-term impacts of using automation to improve IT operational capabilities. As a result, gaining internal, initial support that leads to long-term funding for automation can be difficult.

To determine how to get started on the IT automation journey, organizations should establish an IT automation center of excellence that will guide IT automation efforts through the planning, execution, and measurement and expansion phases. The following are tasks that the IT automation center of excellence should consider in each phase:

- **Plan:**
  - Identify what technology and business processes will benefit from autonomous IT operations.
  - Map IT automation benefits to the organization's KPIs; for example, mean time to identify (MTTI) and mean time to resolve (MTTR).

- Define the automation project, process (start to finish), and metrics and outcomes for short- and long-term progress.
- Create a holistic automation strategy enabling executives and teams to better understand objectives and goals, integration points, management staff ownership and accountability, and a combined top-down/bottom-up automation approach.
- Understand and define the expected customer impact from the use of automation; recognize that it's a people, process, and technology discussion.
- Consider the idea of autonomous automation as well as other types of automation where human interaction might be required.

- **Execute:**
  - Start small but think big. Assigning staff and/or creating teams to build, manage, change, and deploy automated processes might require new roles and new organizational structures dedicated to automation (or DevOps), staff reallocation, project management, and integration, and scripting skills may be required.
  - Choose a technology/services partner for implementing advanced automation tools.
  - Evaluate pros and cons of using integrated versus standalone versus self-built tools for short- and long-term automation implementation.
- **Measure and expand:**
  - To measure the value of automation, track data related to the outcomes triggered by automated tasks. Cost analysis helps define cost savings between human-based manual tasks and automated processes. Measuring the impact of automation on KPIs will drive the business case.
  - Decide on next steps:
    - Pursue more advanced levels of automation.
    - Expand automation to other areas.
    - Reinvest in other IT or non-IT projects.

ABOUT DELL TECHNOLOGIES AND INTEL

Dell Technologies

Dell Technologies has prioritized and continues to deliver autonomous operations capabilities across its entire infrastructure portfolio to provide a simplified IT experience to organizations, allowing organizations to spend less time intervening on routine maintenance, enjoy higher service levels, and enhance security with access to more IT operations data and the ability to implement self-healing measures.

As a leading provider of IT products and services for organizations, Dell offers an extensive portfolio of IT products and services that spans servers, storage, data protection, networking, converged and hyperconverged infrastructure, software-defined datacenter and cloud platforms, as well as enterprise infrastructure software in virtualization, storage, security, endpoints, and data protection. These products and services offer levels of automation built on decades of experience. By providing both traditional and as-a-service models with APEX, Dell Technologies provides end-to-end software solutions that connect applications and data and a variety of consumption models so that end users can pivot from managing infrastructure to focusing on inspired innovation.

Dell Technologies brings together the trusted partnerships, innovative technologies, and end-to-end simplicity end users need to serve their customers. Dell's holistic and intelligent offerings enable end users to build competitive breakthroughs simply, quickly, and securely.

Intel

Intel provides solutions and services that drive digital transformation, leading to enhanced business outcomes. Intel's server processors deliver the capabilities to support datacenter infrastructure and applications, from cloud and in-memory analytics to HPC and AI. Intel's server processor portfolio includes the Intel Xeon Scalable Processor and the Intel FPGA-based acceleration solutions. The Intel Xeon Scalable platform provides a foundation for datacenter agility and scalability, as this innovative processor provides high levels of capabilities and convergence across compute, storage, memory, network, and security. Intel's FPGA-based acceleration solutions help end users move, process, and store data quickly and efficiently. As workloads and traffic patterns shift, Intel FPGAs can anticipate needs and bring optimized hardware acceleration to bear on critical points. In addition, Intel offers technologies that expand the memory and storage capacity of the datacenter. Intel's memory and storage portfolio includes Intel Optane Persistent Memory, Intel Optane Solid State Drive (SSD), and Intel QLC NAND Technology. With Intel Optane Persistent Memory, end users can improve performance levels in memory-intensive workloads and virtual machine density. The Intel Optane SSD helps eliminate datacenter storage bottlenecks and allows for large data sets. This storage solution can accelerate applications, reduce transaction costs for latency-sensitive workloads, and improve overall datacenter TCO. The Intel QLC NAND Technology helps shrink HDD system footprints, reduce costs, and enhance performance.

CONCLUSION

IT automation is becoming a critical success factor for organizations of all sizes in most industries. Organizational expectations anticipate IT services to be continually available. Delayed or slowed response rates can have a direct impact on customer satisfaction, employee productivity, and profit — confirming the need for IT automation. However, IDC recognizes that automating IT operations can be a complex process that requires internal decision-maker buy-in. Cost is often the primary challenge as organizations are questioning why IT automation is needed when money is already being spent on people doing the same job. Building IT staff morale can also be challenging as IT employees ponder what IT automation means for career stability.

Yet, despite these challenges, there are distinct benefits to automating IT operations. Overall, IT automation does not equate to redundancy. Reducing the amount of time that IT staff are allocated to infrastructure management leads to new opportunities for personal and career development. The acts of retraining and redeploying allow employees to focus on value-driven tasks that increase innovation. This not only moves the business forward but also provides value to the employees by increasing their skill set to maintain workforce relevancy. By proactively optimizing IT efficiency, IT can better maximize the value it delivers to the business.

About IDC

International Data Corporation (IDC) is the premier global provider of market intelligence, advisory services, and events for the information technology, telecommunications and consumer technology markets. IDC helps IT professionals, business executives, and the investment community make fact-based decisions on technology purchases and business strategy. More than 1,100 IDC analysts provide global, regional, and local expertise on technology and industry opportunities and trends in over 110 countries worldwide. For 50 years, IDC has provided strategic insights to help our clients achieve their key business objectives. IDC is a subsidiary of IDG, the world's leading technology media, research, and events company.

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