The Hackett Group
World Class Defined and Enabled

IT EXECUTIVE INSIGHT
February 2022

The Business Value of Migration to Amazon Web Services

By Richard Pastore, Michael Fuller, and Justin Gillespie

EXECUTIVE SUMMARY

Migrating on-premises infrastructure to Amazon Web Services (AWS) achieves quantifiable business value in the areas of resiliency, agility, cost savings, and staff productivity, according to The Hackett Group's Cloud Services Study. Applications migrated to AWS at least 12 months ago achieve the following post-migration changes in performance and value:

- 43% faster time to market for new application features or functionality.
- 66% increase in administrator productivity.
- 29% increase in staff focus on innovation.
- 20% reduction in total technology infrastructure costs.
- 45% decrease in security-related incidents.

INTRODUCTION

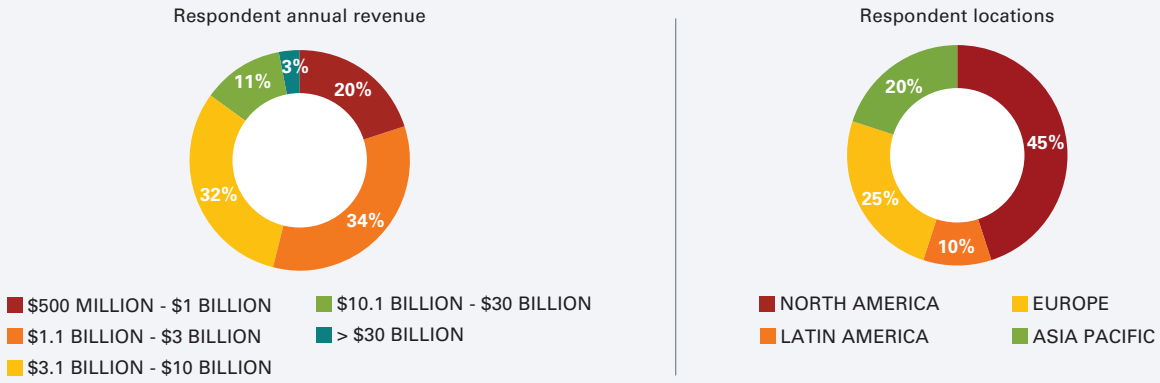
Discussions between advisors from The Hackett Group and clients working on digital transformation and infrastructure modernization have revealed that while many of their "easy" applications have already been migrated to the cloud, a chief deterrent to full migration is uncertainty about whether the time and effort invested will yield commensurate results. Business leaders wonder if they will see further productivity gains; how secure their more sensitive applications and data will be in the cloud; and how migration will affect increasingly critical agility metrics, such as time to market.

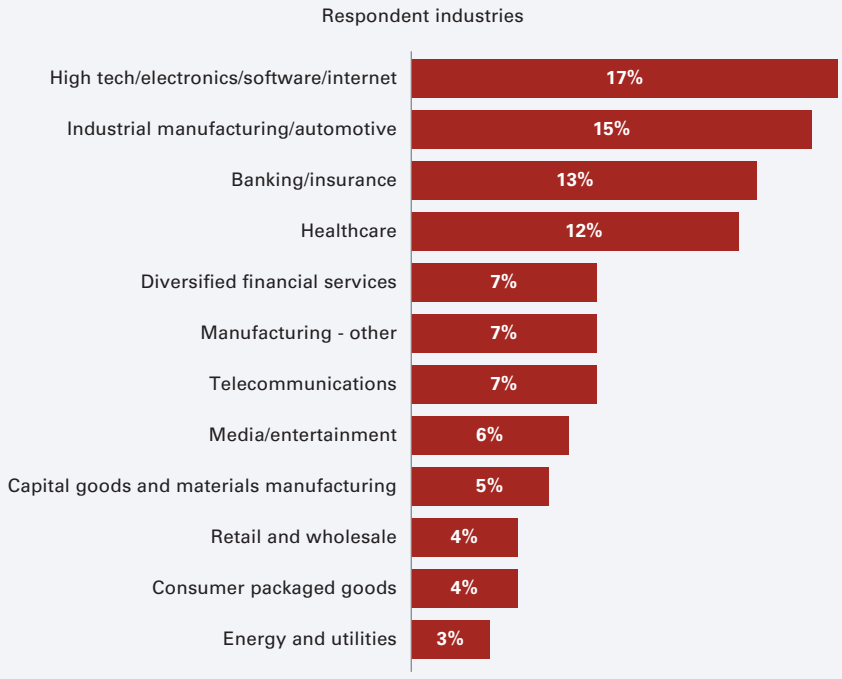
To help answer such questions, this study collected data on performance before and after migration to quantify the actual value generated by the move to cloud. (See "About the study" for details.)

About the study

The Hackett Group conducted its global Cloud Services Study of more than 1,000 organizations from October through December 2021 **(Fig. 1)**. The purpose of the study was to evaluate the business value of migrating from on-premises to cloud-hosted infrastructure and the practices that help organizations maximize the business value created. The study was commissioned by AWS. This report is based on data collected from organizations that have had migrated applications on AWS for at least 12 months. The analysis and perspectives contained here are solely those of The Hackett Group.

FIG. 1 Survey respondent demographics





Source: Cloud Services Study, The Hackett Group, 2021

Study respondents included technology executives, infrastructure and operations directors, architects, and engineers. Respondents were interviewed over the phone, answered questions about their overall cloud migration, and provided details on up to three individual applications migrated to the cloud. Because this is a cloud study, it can be presumed that respondents as a group are more committed to an infrastructure cloud strategy than organizations at large.

We designated the top decile (10%) of the study population as "top performers" to understand what is possible with the cloud. The top decile was calculated based on the weighted average score on 22 post-migration key performance indicators (KPIs). (See the appendix for details.)

Study findings related to performance and the factors that influence it are presented in these pages. Subsequent reports will address best practices for maximizing cloud value, particularly in the areas of migration approaches and cloud financial management, as well as cloud's impact on business functions, lines of business, and industries.

THE CURRENT STATE OF CLOUD MIGRATION

Study respondents have had some part of their infrastructure deployed on AWS for a median of three years; and the particular applications analyzed in this report have been AWS-hosted for a median of two years.

Eighty percent of migrated applications are meeting service-level agreements, a 23% improvement over their pre-migration state **(Fig. 2)**. Further, respondents reduced their unplanned downtime by 69% over a 12-month period. Total IT infrastructure spend declines by 20% for overall respondents to an average of 2.97% of current annual revenue.

Top performers in the study (i.e., respondents with the highest performance scores averaged across 22 cloud KPIs) demonstrate what is possible with the cloud. Top performers see a 47% reduction in enterprise infrastructure costs, more than double the percentage reduction of the overall respondents in the study, and their unplanned downtime decreases after migration to just two hours per year, compared to overall respondents' post-migration downtime of 12.5 hours annually.

The most profound difference between the two comparison groups is their perspective on the importance of technology in their organizations. Among the top performers, 63% view technology as part of their DNA, core to their business model and competitiveness, compared to only 36% of the overall respondents **(Fig. 3)**. The implication is that organizations with a more strategic approach to technology are more effective in their use of cloud, reaping greater rewards as a result.

The most common goal among overall respondents for moving applications to AWS is to reduce or optimize costs (65%), very closely followed by product and

FIG. 2 Fundamental metrics for applications migrated to AWS

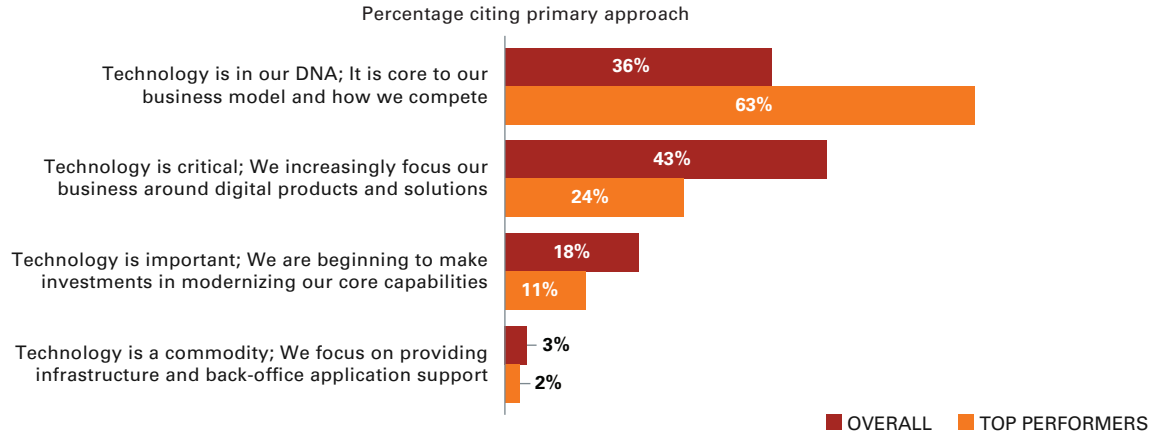
69% decrease in unplanned downtime

20% technology infrastructure cost savings

23% more infrastructure SLAs met

Source: Cloud Services Study, The Hackett Group, 2021

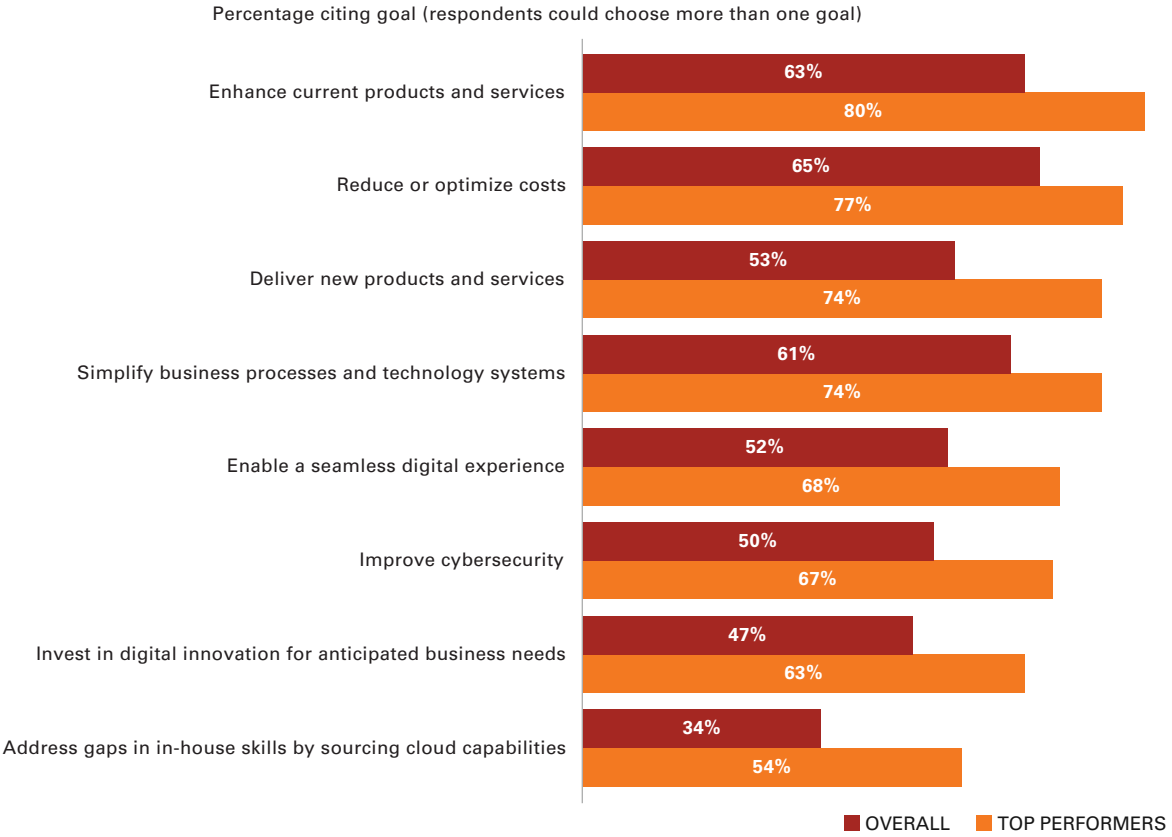
FIG. 3 Primary approach to leveraging technology



Source: Cloud Services Study, The Hackett Group, 2021

service enhancement (63%). The expectation is that AWS will drive product improvements faster and more economically than would be possible on-premises. Top performers, however, value product and service enhancements above all. It is worth noting that top performers cite more goals for migrating as they have a broader perspective on the potential benefits of migration to AWS. They also seem to value delivering new products and services and addressing skill shortages to a higher degree, given these objectives have the largest citation differences between top performers and overall respondents (Fig. 4).

FIG. 4 Most common goals for migrating to AWS



Source: Cloud Services Study, The Hackett Group, 2021

It is notable that cybersecurity is a goal for 50% of overall respondents and 67% of top performers. In the early days of public cloud hosting, concerns about security were one of the main reasons for not migrating. These fears have been replaced by the realization that cloud providers' cybersecurity safeguards are typically more robust and effective than the typical in-house capability. This is affirmed by dramatic reductions in security incidents and mean time to detect incidents revealed in this research.

FOUR TYPES OF CLOUD BUSINESS VALUE

Below, we explore specific outcomes that AWS customers are seeing in four key areas of cloud business value: cost savings, staff productivity, resiliency, and agility.

#1: Cost savings

Study data shows that organizations migrating infrastructure to AWS experience an average 20% savings in total infrastructure costs.[1] This equates to a $69-million reduction in respondents' average pre-migration annual IT spend of $345 million. Top performers achieve a 47% savings in total infrastructure costs, which is a $164-million reduction on a $349-million average annual IT spend (Fig. 5).

Since study respondents also submitted data for up to three specific applications migrated to AWS, cost savings specific to these applications can also be calculated. For overall respondents, application-specific infrastructure costs decline by an average of 20% year over year across a six-year period of deployment.[2]

Once migrated, some application types deliver greater cost reductions than others. There are many factors behind this, including relative complexity of the applications, the degree to which they are modernized and optimized before and after migration, and their duration in the cloud. For applications in general, patience pays off. When analyzing application costs by the length of time hosted on AWS, savings rates improve with each year (Fig. 6).

FIG. 5 Cost savings achieved from migrating to AWS

Key performance indicator*	Overall respondents			Top performers		
	Before migration	After migration	% change	Before migration	After migration	% change
Total IT spend as % of current annual revenue**	8.15%	7.81%	-4%	6.94%	6.08%	-12%
Total enterprise technology infrastructure spend as % of current annual revenue***	3.71%	2.97%	-20%	3.67%	1.95%	-47%
Overprovisioning of applications as % of capacity above normal demand	43%	33%	-23%	50%	30%	-40%

*See appendix for definitions/explanations of KPIs

**Technology spend levels for the study population are not representative of cross-industry averages because of a preponderance of industries that typically invest more in technology (high tech, financial, etc.), and a bias in participation by organizations that view technology as highly strategic and so are predisposed to greater investment levels.

***Percentage of annual revenue is used to remove the bias of company size in expressing percentage savings and other quantifiable metrics in this study.

Source: Cloud Services Study, The Hackett Group, 2021

FIG. 6 Migrated application cost reduction over time on AWS

	Duration	One year	Two years	Three years	Four years	Five years	Six years	Six-year average
Overall respondents	% reduction since migration	Baseline	-14%	-16%	-19%	-23%	-30%	**-20%**

Source: Cloud Services Study, The Hackett Group, 2021

[1] Infrastructure costs include labor, outsourcing and staff augmentation as well as costs associated with storage, computing, server maintenance, and any associated overhead.

[2] A six-year time frame is cited because the migrated duration of most applications submitted for analysis fall within that time span.

Cloud's Role in Digital World Class™ Performance

Digital World Class is The Hackett Group's designation for organizations that have fully leveraged digital technologies to achieve a level of performance that eclipses the peak of effectiveness and efficiency attained by legacy organizations. In 2021, The Hackett Group updated its longstanding, proprietary benchmark methodology to include measurement of the technology enablement that is now essential to outstanding performance in a digital business environment. The benchmark assesses performance in two primary dimensions – business value generation and operational excellence. Only organizations that score above the top benchmark quartile in both of these two dimensions achieve Digital World Class distinction.

As a fundamental component of digital enablement, cloud migration and deployment correlate with Digital World Class performance. For example, Digital World Class organizations allocate 40% more of their total IT spend to cloud-hosted systems than organizations that did not attain Digital World Class performance levels.

The value generated through cloud usage helps Digital World Class organizations earn 83% higher net margins than their industries' five-year median, 82% higher return on equity, and 55% higher total shareholder return.[4]

Digital World Class™ value grid

Source: The Hackett Group

For a broader perspective, consider The Hackett Group's proprietary Digital World Class™ benchmark research, which reveals cloud's impact on infrastructure costs and productivity in human resources, finance, and procurement. An analysis comparing cloud to on-premises deployments shows that increased cloud adoption correlates to:[3]

- Nearly 3X lower total cost for procurement functions compared to equivalent on-premises solutions.
- A $0.24 decrease in HR costs for every dollar invested in cloud.
- Labor cost reductions of 18% to 20% in both HR and finance.
- A 4% increase in HR productivity (output) for every dollar invested in cloud.
- A productivity increase of 7% to 12% in procurement. (See "Cloud's Role in Digital World Class™ Performance" for more cloud-related benchmark performance details.)

There are important factors to consider when assessing potential cloud cost savings. Reductions will vary depending on pre-migration baseline infrastructure costs, application types, time in the cloud, and the extent of functionality expansion and innovation after migration. For example, organizations with excessive infrastructure spend (higher than 75% of overall respondents) see their costs reduced by 41% after migrating applications compared to the 20% average reduction of overall respondents.

In addition to infrastructure cost savings, organizations migrating to AWS benefit from a 23% reduction in the overprovisioning of application capacity. Applications subject to exceptional circumstances, such as seasonal peaks in demand, are often highly overprovisioned to reduce the risk of a capacity shortfall. For example, carrying costs for CPU cores, virtual machines (VMs), and storage that may not be utilized for most of the year. That excess capacity compromises efficiency and drives up cost. In contrast, cloud providers can scale capacity more easily in the applications they host.

[3] Multi-variate correlation analysis

[4] Digital World Class™: The New Performance Bar for Technology Organizations, The Hackett Group, August 2021

#2: Staff productivity

After moving applications to AWS, overall respondents experience improvement in IT infrastructure staff productivity. They cite a 66% increase in the number of retained VMs managed per administrator. Such post-migration efficiencies enable AWS customers to shift or convert 17% of staff positions from infrastructure maintenance and other nonstrategic roles to positions focused on infrastructure planning, architecture, orchestration, and innovation (Fig. 7).

A more significant and potentially more valuable productivity gain takes place within development teams. AWS customers cite a 29% increase in developer time devoted to new features and functionality versus minor enhancements, updates, and break-fixes, which are typically handled by cloud providers. AWS developer tools can also be used to simplify, facilitate, and automate coding, which further increases developer productivity. These productivity improvements result in a 32% average decrease in time between production releases for migrated applications.

In a study of technology innovation conducted by The Hackett Group in 2021, "lack of time/capacity to focus on innovation" was ranked by respondents as the greatest hurdle to innovation, ahead of other challenges, such as resistance to change and risk aversion.[5] The productivity gains of cloud migration afford a direct way to gain innovation capacity.

This was the case for a commercial finance organization based in India. The technology organization increased the time that its developers focus on new features and functionality from a pre-migration level of 20% to a post-migration level of 60% for customer relationship management and business intelligence. The increase was even larger for its migrated financial planning and analysis system – from 20% to 80%.

"Without cloud managed services, we had very limited scope of innovation," states the organization's IT infrastructure manager. "With new services, we can modify and innovate applications, and add new services to enhance the user experience, reduce costs, and improve application resiliency." He has been able to do so with existing staff, shifting their duties from system provisioning and other operational tasks rather than replacing team members.

FIG. 7 Productivity improvements achieved from migrating to AWS

Key performance indicator*	Overall respondents			Top performers		
	Before migration	After migration	% change	Before migration	After migration	% change
Virtual machines managed per administrator	213.6	353.9	66%	426.7	792.7	86%
Infrastructure staff focused on infrastructure planning, architecture, orchestration and innovation	46%	54%	17%	46%	66%	43%
Development staff focused on creating new features and functionality (innovation)	52%	67%	29%	55%	72%	31%
Average time between production releases (months)	5.3	3.6	-32%	3.4	2.6	-24%

*See appendix for definitions/explanations of KPIs

Source: Cloud Services Study, The Hackett Group, 2021

[5] Study Results: Improving Innovation From Technology, May 2021, The Hackett Group

#3: Resiliency

The business value that cloud generates in the form of resiliency includes increased system availability, reduced latency, higher SLA achievement, and better security. The pandemic disruption served notice to organizations that resiliency depends on more than a (usually outdated) disaster recovery plan and redundant data sites. Cloud-hosted infrastructure helped keep organizations working. The chief innovation and transformation officer of a global marketing communications organization spoke about this with researchers from The Hackett Group during the Covid-19 shutdown. "People didn't take us seriously when we said we wanted to go to a primary cloud strategy. We were warned that it wasn't secure, it wasn't ready for prime time, etc.," he said. "Fast-forward a few years, and we've been through MERS and SARS in Asia, volcanic ash in Europe, and Hurricane Sandy on the East Coast of the U.S. And every single time, the cloud came to our rescue" by maximizing resiliency of operations.

Cloud scalability was critical to connect newly remote workers to cloud-hosted platforms and tools during the Covid-19 pandemic. Estimates had cloud demand exceeding 90% of business's cloud capacity plans.[6] Chief information officers (CIOs) told The Hackett Group that their earlier decisions to migrate to AWS made it much easier to accommodate the surge and minimized disruption.

The CIO of a healthcare nonprofit based in the United States completed his cloud strategy execution at the end of 2019 with the migration of the organization's final on-premises ERP system. Three months later, the shutdown happened. "The deployment to the cloud with secure integration between mission-critical applications allowed us to execute well, with only a minor impact on our working approach," said the CIO. "If the pandemic had hit between 2018 and 2019, our ability to perform our mission via technology would have been impacted to a much larger extent." He added that cloud will be essential to delivering products and solutions faster in a persistent hybrid office-remote work model.

With the ever-increasing level of commerce taking place digitally, system downtime is no longer just an inconvenience to employees and customers. Today, downtime disables businesses and sends customers to the competitors' sites. In 2020, the average downtime for a single outage was 79 minutes, at a cost averaging $84,650 per hour.[7]

The consequences of data breaches and ransomware attacks have become more visible in the news, leading to public embarrassment and major lawsuits for organizations affected. Beyond any ransom paid, recovery from cyberattacks costs organizations an average of $4.6 million. For data breaches, the average mitigation outlay is $4.2 million.[8]

Migration to AWS leads to dramatic improvements in availability and security, surpassing 50% for most resiliency KPIs (Fig. 8).

FIG. 8 Resiliency improvements achieved from migrating to AWS

Key performance indicator*	Overall respondents			Top performers		
	Before migration	After migration	% change	Before migration	After migration	% change
Security-related incidents per month**	3.1	1.7	-45%	1.4	0.5	-64%
Mean time to detect security incidents (minutes)	156.2	94.6	-39%	85.7	39.8	-54%
Critical infrastructure-related incidents per month**	1.4	0.7	-50%	0.5	0.2	-60%
Unplanned outages in 12-month period**	1.3	0.6	-54%	0.4	0.1	-75%
Unplanned downtime hours in 12-month period	40.0	12.5	-69%	10.0	2.0	-80%
Percentage of infrastructure SLAs consistently met	65%	80%	23%	80%	91%	14%

*See appendix for definitions/explanations of KPIs

** Per 1,000 connected devices

Source: Cloud Services Study, The Hackett Group, 2021

[6] 2021 State of the Cloud Report, Flexera
[7] Data Protection Report 2021, Veeam
[8] Cost of a Data Breach Report 2021, IBM Security

#4: Agility

The most strategic of all cloud migration benefits, agility equips organizations for success in a digital business environment. Agility refers to the ability to respond quickly and effectively to changes in business conditions or disruptive business events. Broadly speaking, the more technology infrastructure an organization has in the cloud, the more agile it can be. A study by The Hackett Group on agility in business services functions (i.e., finance, HR, IT, and procurement), found that the most agile organizations have 41% of their infrastructure in the cloud, compared to just 29% for the average respondent.[9]

Nothing in living memory has been more globally disruptive and more demanding of agility than the Covid-19 pandemic. Many organizations had a week or less to prepare for facility shutdowns, and to spin up robust and secure remote-work capabilities. The disruption spotlighted cumbersome infrastructures and process complexities that slowed response time and threatened continuity of operations.

However, slow decision-making due to a lack of readily available data proved even more problematic, according to a poll conducted by The Hackett Group at the height of the shutdown period.[10] That is why it is particularly noteworthy that AWS customers experience a 60% decrease in the time required to produce actionable insight from the moment data is made available. The enhanced availability of data enabled by AWS is a key differentiating factor.

Winning in a digitally competitive industry or market depends heavily on agility in product development. A major aspect is the speed at which new technology-enabled products and features are brought to market. For applications in the cloud, technology organizations are better able to use agile/DevOps methodologies thanks to services that simplify and accelerate provisioning infrastructure, deploying application code, automating software release processes, and monitoring application and infrastructure performance. These changes, combined with the development-team productivity gains discussed earlier, contribute to a 43% decrease in time to market and a faster pace for production releases (Fig. 9).

FIG. 9 Agility improvements achieved from migrating to AWS

Key performance indicator*	Overall respondents			Top performers		
	Before migration	After migration	% change	Before migration	After migration	% change
Time to actionable insight from when application data is made available (hours)	136.0	54.6	-60%	52.0	24.0	-54%
Time to market for new application features (workdays)	60.0	34.0	-43%	29.5	12.0	-59%
Average time for production release (workdays)	21.0	13.9	-34%	7.0	3.1	-56%
Percentage of projects/ applications that employ agile/DevOps methodologies	50%	70%	40%	60%	90%	50%

*See appendix for definitions/explanations of KPIs

Source: Cloud Services Study, The Hackett Group, 2021

[9] IT's Quest for an Agile Operating Model: Performance, Practices and Pitfalls, The Hackett Group, 2019

[10] Poll Results: The Impact of Covid-19 on IT, The Hackett Group, May 2020

RECOMMENDATIONS

The Cloud Services Study found that migration to AWS drives new business value in cost savings, staff productivity, resiliency, and agility. The quantifiable impacts prove that cloud is not solely or even primarily a "cost play," but a strategic advantage over the on-premises infrastructure model. The benefits in agility alone – faster time to market and insight, and more frequent production releases – better position organizations to compete in the digital business arena. The cloud-enabled shift in focus, away from infrastructure administration and application maintenance to new development, is a literal game changer.

In upcoming reports in this series, we will examine the specific migration strategies and cloud financial management practices that contribute to superior results. Meanwhile, the following are key takeaways from this report:

- Financial benefits of migration go beyond infrastructure spend reduction. Expectations should also account for the efficiencies in application provisioning and cost avoidance from fewer security incidents, reduced downtime, and greater agility.

- Optimize cloud costs after migration. Incremental reductions in ongoing fees can be achieved through consumption-based pricing structures and other cloud financial management best practices. Tools, such as AWS Cost Explorer, can help uncover such opportunities.

- Cloud hosting should be a fundamental aspect of any digital transformation strategy and roadmap, particularly because of associated agility benefits. Organizations attempting to transition to a digital delivery model and compete in digitally advanced sectors should prioritize migration of core applications and data to enable faster data access, insight generation, and time to market.

- Cloud should be a key tenet of future workforce enablement. The accessibility and scalability of AWS-hosted data and applications support the paradigm of a hybrid or digital workforce, with its constant mobility; fluid headcount; and need for unfettered, real-time access to highly secured systems.

- The pandemic experience proved that cloud-based infrastructure is an effective hedge against catastrophic disruption. Accelerated cloud migration should be part of every business continuity investment strategy and resiliency improvement roadmap.

APPENDIX

KPIs Determining Top-Performer Status

Top-performing organizations in the Cloud Services Study (referred to in this report's text and figures as top performers) achieved a top-10% (decile) weighted average score across 22 KPIs, based on their direct responses to survey questions and on calculated metrics.

The KPIs used for this analysis are listed in Fig. 10. Each was weighted equally and scores were based on post-migration values only. Where one or more applications is indicated, scores were averaged across all the AWS-migrated applications submitted for analysis by respondents.

FIG. 10 KPIs used to determine top performers

Performance indicator category	Performance metric
General performance	Percentage of company/business unit's technology programs and initiatives that achieve anticipated return on investment
	Average forecast accuracy for company/business unit's cloud spend
	Average employee satisfaction rating for the migrated application(s)
	Average customer satisfaction rating for the migrated application(s)
	Change in number of issues related to response time of the application(s)
Cost savings & productivity	IT infrastructure spend as a percentage of current year annual revenue
	Number of virtual machines (VMs) managed per server administrator
	Total terabytes of storage managed per storage administrator
	Percentage of infrastructure staff focused on day-to-day operations activities such as purchasing, repairs, installation, upgrades, testing, and monitoring (versus strategic activities such as capacity planning, budgeting, roadmapping and other activities)
	Migrated application(s) infrastructure spend as a percentage of current year annual revenue
	Percentage of application development team's effort directed toward developing new features and functionality (versus minor enhancements, updates, and break-fixes)
Resiliency/security	Number of critical incidents per billion of current year annual revenue
	Number of outages per billion of current year annual revenue
	Hours of unplanned downtime experienced during 12-month period
	Number of security-related incidents per billion of current year annual revenue
	Mean time to detect or identify security incidents
	Percentage of infrastructure SLAs consistently met
Agility	Average frequency of production releases for the application(s)
	Average time for a production release for the application(s)
	Average time to market for new features for the application(s)
	Length of time to produce actionable insights from when data is made available for the application(s)
	Percentage of projects/applications using agile/DevOps methodologies

Source: Cloud Services Study, The Hackett Group, 2021

DEFINITIONS

The following are definitions for terms used in this report:

Agile methodology: A software development methodology that involves the continuous iteration of development and testing in the software development process. This approach emphasizes iterative, incremental, and evolutionary development.

Application response time: The amount of time it takes an application to return the results of a submitted request to an end user. Response time is often affected by factors such as network bandwidth, along with the volume of users and requests submitted.

Business services function: The functions commonly included in the business services category of general and administrative (G&A). These include the technology organization, finance, human resources, procurement, and global business services organization.

Cloud-spend optimization: Use of tools and strategies to incrementally reduce the ongoing cost of cloud hosting. The following is a list of such tools and strategies:

- Pricing model-based optimization: Takes advantage of cloud-provider discounts and flexible pricing options.
- Rightsizing of cloud resources: Optimizing consumption of cloud resources to reduce overspending.
- On-demand or elastic cloud usage: Use of flexible options to allocate resources (workload scheduling, dynamic resource allocation, autoscaling, etc.).
- Use of cloud providers' excess capacity: Use of spot instances, spot VMs, preemptible VMs, etc., to reduce the cost of cloud resources.
- Serverless computing/serverless architectures: A cloud execution model in which the cloud provider allocates resources on demand, taking care of the servers on behalf of customers. No computing resources are allocated to an application when it is not in use.
- Active modernization of cloud resources: Adoption of the latest technological innovation from the cloud provider, e.g., new families of solutions and/or updates.

Critical incident: An incident that has a significant negative impact on the business and/or end users, and must be addressed urgently. In most organizations, these are classified as Severity 0, Severity 1, and Severity 2, or as Priority 0, Priority 1, and Priority 2.

Customer relationship management (CRM): A software solution for managing an organization's relationships and interactions with customers and potential customers. CRM solutions have tools to help with contact management, sales management, agent productivity, and more.

DevOps: Short for development operations, a software development method that emphasizes communication, integration, and collaboration among technology teams to enable rapid deployment of products. DevOps promotes collaboration between development and operations teams to deploy code to production faster, and in an automated fashion.

Enterprise resource planning (ERP): Software that organizations employ to manage day-to-day business activities such as accounting, procurement, project management, risk management and compliance, and supply chain operations. Some ERP solutions include enterprise performance management, software that helps plan, budget, predict, and report on an organization's financial results.

HR information systems (HRIS): A software solution to manage and process detailed employee information and HR-related policies and procedures. HRIS can standardize human resources tasks and processes, while facilitating accurate record-keeping and reporting.

Infrastructure spend: IT or total infrastructure spend includes all enterprise technology cost of internal labor, outsourced services, staff augmentation, server maintenance costs, and any associated overhead. Does not include costs associated with application development and support teams, or any software license and maintenance costs. Application infrastructure spend includes only those technology costs associated with particular applications migrated to AWS.

Managed cloud services: An enterprise service provided directly by a cloud provider for ongoing management of customers' cloud infrastructure.

Mean time to detect (MTTD): Average time it takes a cybersecurity team to discover incidents in its environment. The lower the MTTD, the more likely it is to limit any damage done by a cybersecurity incident.

Outage: The disruption of an application or service due to failures of the service infrastructure. Prevention of unplanned outages is a key goal for technology organizations.

Overprovisioning: The purchasing or commissioning of excess storage and/or computing capacity for running IT services to accommodate exceptional circumstances such as seasonal peaks in demand. Overprovisioned resources include central processing unit cores, VMs, and storage capacity.

Production release: Deployment of one or more changes to a live environment accessible to the application's users. Changes may be new or updates to existing functionality/components.

Rearchitecting: More intensive than refactoring an application, rearchitecting involves substantial changes to an application to shift it to a new application architecture, in order to take advantage of new or improved capabilities. These changes make an application more cloud-compatible, scalable, and reliable.

Refactoring: The process of restructuring the application while still maintaining its user functionality. These small changes to the application make it easier to maintain, more scalable, and minimize the chances of failure.

Return on investment (ROI): Metric expressing the quantifiable savings and benefits generated from an investment. Comparing the anticipated ROI at the start of a technology program with the actual ROI at the program's completion helps determine the program's success.

Security-related incident: An incident that involves violating an explicit or implied security policy, or the failure of a security safeguard. Incidents may include successful attempts to gain unauthorized access to a system or its data; unwanted disruption or denial of service; unauthorized use of a system for the processing or storage of data; and changes to system hardware, firmware, or software characteristics without the owner's knowledge, instruction, or consent.

Service-level agreement (SLA): A contract specifying a level of service for critical IT infrastructure elements and service categories, such as availability, speed, and scalability.

Software as a service (SaaS): Applications that are native to the cloud, not migrated from on-premises to cloud hosting. SaaS applications were excluded from this study.

Time to market: Cycle time for launching a product feature. Includes idea generation; design and development; and making the feature available to the end users.

Virtual machine (VM): A computer resource that uses software instead of a physical computer to run programs and deploy apps. One or more virtual "guest" machines run on a physical "host" machine.

About the Advisors

RICHARD PASTORE

Senior Director, IT Research Advisor

Mr. Pastore develops and delivers research and related resources for The Hackett Group's Advisory programs, including IT. He has over 25 years of experience working with CIOs and their teams to apply thought leadership and best practices to help them extract the maximum business value from strategic investments in technology. Mr. Pastore has spent the last 15 years designing, implementing and managing IT and business transformation leadership programs, including best practices research, seminars, workshops, and conferences, assessment tools and frameworks for Fortune 1000 organizations. He is former editor of CIO magazine and vice president of the CIO Executive Council.

MICHAEL FULLER

Principal and Co-Leader, Technology Transformation Practice

Mr. Fuller has over 25 years of management consulting and IT experience, primarily working in financial services, utilities and energy, and consumer product goods. He has had hands-on experience in designing and implementing IT operational models, aligning IT with its business partners, and in the development of highly efficient and effective IT organizations.

JUSTIN GILLESPIE

Principal, Digital Enablement Services

In addition to his work with The Hackett Group, Mr. Gillespie is a faculty member of the Security Executive Council. Previously, he was Principal and Global Practice Leader for The Hackett Group's Analytics and Data Management Practice. Prior roles included Vice President of Business Intelligence at OSI Consulting and Principal Systems Consultant at Brio Technology. Mr. Gillespie also founded 1Answer Solutions, an analytics and business intelligence services provider.

www.thehackettgroup.com/facebook
www.thehackettgroup.com/twitter
www.thehackettgroup.com/linkedin

The Hackett Group
1000 Abernathy Road NE
Suite 1400
Atlanta, GA 30328

T. +1 770 225 3600
T. 1 888 842 2538 (toll-free)
W. www.thehackettgroup.com

London
Cannon Green
27 Bush Lane
London, EC4R 0AN, UK

T. +44 20 7398 9100

7000239