



The Business Value of Amazon Web Services: Europe, the Middle East and Africa

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BUSINESS VALUE HIGHLIGHTS

Click on highlights below to navigate to related content within this PDF.

400%
five-year ROI

8 months
to payback

50%
lower five-year cost
of operations

29%
lower cost of
infrastructure

126%
more IT staff time for
innovation

66%
fewer unplanned outages

73%
faster deployment of new
compute/storage resources

58%
faster development
life cycle — new applications

€77.0M
higher revenue enabled
per year per organization

Executive Summary

In today's digital-first world, the cloud plays a critical role in helping organizations gain faster access to new technologies in mission-critical areas. These cloud services cover needs across a diverse technology ecosystem, including compute services, data services, application framework services, and usage multiplier services. Organizations, developers, and IT organizations are relying upon these cloud services to drive innovation, automation, and insights of value. Furthermore, cloud continues to be defined by fundamental cloud governance, consisting of the managing, optimizing, migrating, and securing of diverse cloud resources and data sets.

Yet, increasingly, cloud selection processes are going beyond technology considerations to the business case. IDC expects that by 2023, 40% of the G2000 will reset cloud selection processes to focus on business outcomes rather than IT requirements, valuing access to service providers' portfolios. Cloud providers are increasingly expected to help organizations make the transition to cloud-native development and governance. CIOs and chief technology officers (CTOs) will require cloud providers to help them achieve business case goals directly related to corporate strategy. Business value studies are an important part of that objective.

IDC interviewed 12 organizations in Europe, the Middle East, and Africa (EMEA) about their use of Amazon Web Services (AWS) as an IT platform for running their businesses. These EMEA-based study participants reported achieving significant value with AWS as a cost-effective, high-performing, and agile foundation for running many of their most business-critical services and applications.

Based on these interviews, IDC calculates that interviewed EMEA organizations will see benefits that will be worth an average five-year ROI of 400% by:

- ▶ **Lowering the cost** of compute, storage, and other IT infrastructure resources for running comparable workloads
- ▶ **Enabling IT teams** to spend more time on business and innovation projects and deliver more value to their organizations
- ▶ **Improving the capabilities of development teams** by speeding up development cadence and quality
- ▶ **Minimizing operational risk and related costs** by reducing unplanned outages that affect the user experience and business outcomes
- ▶ **Realizing better business results** by delivering higher-quality and more timely products and services to customers and prospects

Situation Overview

Using lessons learned from ecommerce where fluctuating demand for computing resources is a given, Amazon kicked off the Amazon Web Services initiative in 2006. Service-oriented architecture (SOA) gained popularity in the mid-1990s to reduce the complexity of software by breaking them up into components delivered as services and connected through common standards. The SOA experience that predated the AWS launch gave Amazon an advantage in building a distributed services architecture offering that fits very well with end-user needs. Using customer feedback, the services offered by AWS have expanded from the initial portfolio that delivered base infrastructure services to higher-end services that are all based on a highly available infrastructure delivered in an abstracted and automated fashion. AWS also provides customers with multiple migration tools to assist them to move compute and database workloads to the public cloud. The success of Amazon is demonstrated by Amazon moving from number 29 on the Fortune 500 list in 2015 to number 2 in 2021.

Business Challenges

Business processes enabled by cloud technology are moving from gains made by continuous improvement through digitization to increased automation of IT processes. The combination of lower-cost cloud-delivered hardware and agility from open source application development tools is leading to much lower infrastructure and labor costs. As a result, businesses that fail to take advantage of technological innovation often struggle to maintain their competitive advantage, as technology innovation and competitiveness through automated processes are tightly linked. By taking advantage of cloud services, organizations can increase agility while decreasing their cost and risk. To surpass competition, today's CEO, CIO, and CTO have to handle the complex task of digitally transforming the entire organization, leveraging technology changing at a much faster pace than any time before.

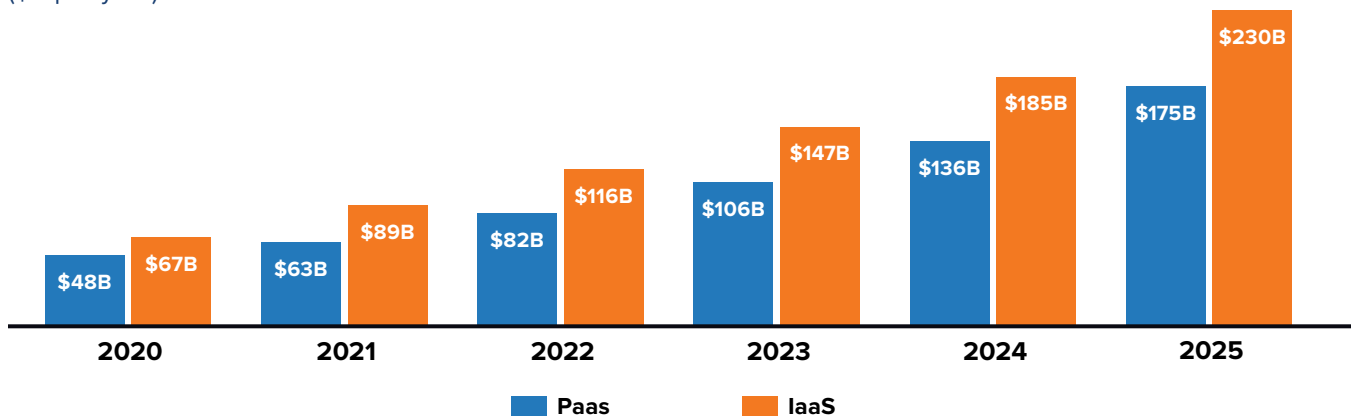
Key Cloud Revenue Growth Trends

Figure 1 shows the worldwide whole cloud market revenue in infrastructure as a service (IaaS) and platform as a service (PaaS). Vendor revenue associated with IaaS and PaaS is projected to grow at a CAGR of 29% from 2020 to 2025. The continued growth in revenue in the cloud market illustrates cloud adoption and speaks to the value that organizations place on the agility gained by developing and deploying applications via cloud services. In 2020, AWS held 46.3% of the IaaS market share, growing at 32% year over year, and held 15% of the PaaS market share, growing at 30% year over year. These market shares and growth rates indicate the success customers are finding with AWS (see *Worldwide Public Cloud Infrastructure as a Service Market Shares, 2020: Data Growth, Edge Use Cases, and Hybrid Deployment Take Center Stage*, IDC #US47350821, July 2020; *Worldwide Competitive Public Cloud Platform as a Service Market Shares, 2020: The Demand for Application Development Leveraging PaaS Continues Strong Across Vendors as DX Accelerates*, IDC #US48033221, July 2021).

FIGURE 1

Worldwide Whole Cloud Revenue by Consumption Model, 2020–2025

(\$B per year)



Note: For more details, see *Worldwide Whole Cloud Forecast, 2021-2025: The Path Ahead for Cloud in a Digital-First World* (IDC #US47397521, September 2021).

Amazon Web Services

Amazon Web Services started as a result of responding to Amazon’s large-scale ecommerce operations’ need for a highly scalable infrastructure. In the early days, primarily a set of low-level services like Amazon Elastic Compute Cloud (Amazon EC2) and Amazon Simple Storage Service (Amazon S3) was abstracting the infrastructure for users. The delivery of cloud-delivered services led to rapid adoption by start-ups that found the platform to be flexible, agile, extensible, and available at a low cost. Responding to continuously evolving customer needs, over a period of time, Amazon built a wide array of higher-level services, leading to increased adoption by enterprises that found value in modernization and the benefits of decreased costs, increased productivity, and improved resilience and agility. **Figure 2** (next page) shows AWS’s portfolio of services.

FIGURE 2
Overview of AWS Services

ANALYTICS

- Analytics
- Data Exchange
- Data Lake
- Data Pipelines
- Data Warehouse
- Elasticsearch
- Streaming
- ETL
- Hadoop/Spark
- Interactive SQL Queries
- Visualizations

BUSINESS APPLICATIONS

- Contact Center
- Sharing & Collaboration
- Online Meetings & Chat
- Voice-Enabled Workplace
- Unified Communications
- Mobile & Web Apps Without Programming

BLOCKCHAIN

- Blockchain Templates
- Ledger Database
- Managed Blockchain

SECURITY, IDENTITY, & COMPLIANCE

- Access Control
- Assessment & Reporting
- Configuration Compliance
- Data Protection
- DDOS Protection Identity Management
- Key Management & Storage
- Monitoring & Logging
- Resource Management
- Threat Detection
- Web Applications Firewall

STORAGE

- Archive Storage
- Backup & Restore
- Block Storage
- Data Transfer
- Edge Processing & Computing
- File Storage
- High-Performance File System
- Hybrid Cloud Storage
- Object Storage
- Windows File System

DATABASE

- Relationship Database
- High-Performance Relational Database
- Built for the Cloud
- Managed MARIADB
- Managed MySQL
- Managed Oracle
- Managed PostgreSQL
- Managed SQL Server
- Purpose-Built DataBase
- Document DataBase
- Graph DataBases
- In-Memory Caching
- Key-Value Store DataBase
- Ledger DataBase
- Time Series DataBase

DEVELOPMENT TOOLS

- Analyze & Debug
- Application Life-Cycle Management
- Authoring
- Build & Test
- Containers
- DevOps Resource Management
- One-Click App Development
- Patching
- Pipeline Orchestration
- Resource Templates Triggers

COMPUTE

- Compute
- Auto Scaling
- Batch Jobs
- Event-Driven Serverless Computing
- Instance Types
- Managed Virtual Private Servers
- Managed Repository for Serverless Apps
- Run & Manage Web Apps
- Serverless Compute
- Virtual Servers
- Containers
- Container Service
- Managed Kubernetes
- Storage & Retrieve Docker Images

MEDIA SERVICES

- Live Video Transport
- Media Storage
- Transcoding
- Video Origination & Packaging
- Video Personalization & Monetization
- Video Processing & Delivery
- Video Streaming Analyses

HYBRID ARCHITECTURE

- AWS Services On-Premises
- Data Integration
- Integrated Devices & Edge Systems
- Integrated Identity & Access
- Integrated Networking
- Integrated Resource & Deployment Management
- VMWare Cloud on AWS
- Integrated 5G

INTERNET OF THINGS (IOT)

- Rules Engine
- Device Analytics
- Device SDK
- Device Shadows
- Event Detection & Response
- Local Compute
- Local Data Collection
- Management & Security
- Microcontroller Operating System
- Visual Applications Development

MACHINE LEARNING

- ML Frameworks
- Deep Learning AMIS & Containers
- Hardware Acceleration
- ML at the Edge
- Tensorflow, Pytorch, Mxnet
- Sagemaker
- Automatic Model Tuning
- Data Labeling
- Hosted NoteBooks
- ML Marketplace
- Model Hosting
- Model Optimization
- Model Training
- Pre-Built Algorithms
- Topic Modelin
- Deep Learning Models
- Reinforcement Learning
- Spot Instances
- Batch Predictions
- Real-Time Predictions
- AI Services
- Chatbots
- Entity Extraction
- Face Analytics
- Face Search
- Forecasting
- Image Labeling
- Nature Language Processing & Recommendation
- Personalization
- Sentiment Analytics
- Speech Transcription
- Text & Data Extractions
- Text to Speech
- Translation
- Video & Image Analysis
- Content Moderation

Source: AWS, 2022

The Business Value of Amazon Web Services

Study Demographics and Methodology

IDC conducted research that explored the value and benefits of using Amazon Web Services through in-depth interviews with 12 organizations based in EMEA, all running enterprise-level workloads on AWS. Interviews covered both qualitative and quantitative topics about the impact of AWS and were designed to develop an in-depth, nontheoretical understanding of how AWS has affected interviewed organizations' IT capabilities, business operations, and costs (For additional details on IDC's Methodology, please see the Appendix).

Table 1 presents study firmographics for the interviewed EMEA AWS customers. Collectively, they had the profile of a large enterprise with an average of 10,486 employees (median of 4,600), with annual revenue averaging €1.5 billion (median of €571.4 million). Six nations in the EMEA region were represented, with study participants based in Germany, Italy, Latvia, the Netherlands, the United Arab Emirates (UAE), and the United Kingdom. Organizations participating in the study represent a range of industry verticals, including consumer services, financial services, gambling, manufacturing, media, professional services, publishing, retail, transportation, and travel.

TABLE 1
Demographics of Interviewed Organizations

	Average	Median
Number of employees	10,486	4,600
Number of IT staff	768	263
Number of terabytes	2,180	93
Annual revenue	€1.5B	€571.4M
Countries	United Kingdom (4), Germany (2), Italy (2), UAE (2), Latvia, and the Netherlands	
Industries	Utilities (2), consumer services, financial services, gambling, manufacturing, media, professional services, publishing, retail, transportation, and travel	

n = 12; Source: IDC in-depth interviews, September 2021

Choice of Amazon Web Services

Participants in the study identified motivators that drove their selection of AWS over competing cloud solutions as they looked to move on-premises workloads to the public cloud. As a group, they reported choosing AWS because of the scalability that enables them to seamlessly match capability and capacity to their current IT and business needs. They also noted the ease with which they can realize competitive advantage and business efficiencies by adopting and leveraging new technologies on the AWS platform. Further, they considered AWS's reliability and stability as a mature cloud platform as important to their decisions.

Interviewed organizations provided greater detail about these and other selection criteria:

▶ **Right solution for existing applications, IT portfolio manager, utilities, United Kingdom**

"We did an extensive comparison before choosing AWS We wanted to be with a cloud provider that is growing in this market. We also liked the on-demand element that AWS offers and wanted a provider familiar with running custom applications."

▶ **Reliable, mature cloud platform, director, engineering and IT operations, food delivery, Germany:**

"We see the cloud as a tool for resiliency and flexibility. We chose AWS because it was more reliable overall than [the other solutions we considered] and a more mature platform."

Use of Amazon Web Services by Interviewed Organizations

EMEA organizations interviewed for this study responded to questions about the extent and mix of their use of AWS services. **Table 2** (next page) provides a breakdown of the interviewed organizations' responses, with annual spend providing a key indicator of their overall reliance upon AWS, with an average annual spend of more than €4.3 million and a median of €2.1 million.

Table 2 also provides further insights into the study participants' use of AWS. This includes statistics that demonstrate organizations' ability to leverage AWS scalability to match business demand for capacity, with an average number of 965 EC2 instances (median 315) but a maximum average of 2,755 (median 450) — a considerable range that reflects how the organizations have become accustomed to accessing AWS resources based upon demand. With more than half of study participants' revenue tied to AWS usage, as also reported in **Table 2** (next page), AWS service offerings have become essential to these organizations' business activities.

TABLE 2
AWS Use by Interviewed Organizations

	Average	Median
Annual spend on AWS	€4.4M	€2.1M
Average number of AWS EC2 instances	965	315
Maximum number of AWS EC2 instances	2,755	450
Number of databases	346	55
Number of terabytes	38,746	575
Number of applications	258	50
Number of users of applications	3,374	2,000
Revenue supported	56%	70%

n = 12; Source: IDC in-depth interviews, September 2021

Business Value and Quantified Benefits of Amazon Web Services

Interviewed EMEA organizations benefit from using various Amazon Web Services by making their IT operations more agile, scalable, and cost effective while improving their ability to meet fluid customer demand and market conditions.

They linked use of AWS to significantly improving their IT organizations' ability to support business operations and spoke to what they perceive as the most significant benefits they are achieving with AWS:

- ▶ **Opex spending model with strong capacity planning/monitoring, IT portfolio manager, utilities, United Kingdom:**

"The main benefit of AWS is moving capex to opex spend on the balance sheet Also, the capacity planning and monitoring is superior to what we could do with our on-prem infrastructure."

▶ **Enablement of analytics; machine learning (ML)–based development with Lambda, IT manager, media, UAE:**

“The analytics and machine learning teams are really making use of AWS Lambda. The machine learning team can release a model and expose it through an API to the product team without worrying too much about infrastructure or scaling or having any knowledge about how to run servers. Lambda takes care of everything.”

▶ **Ease and immediacy of scaling, IT manager, media, UAE:**

“One of the best things about using AWS is the ability to scale very easily. For example, if we want to scale up our compute power for any reason by 20%, we can do this in 20 minutes.”

▶ **Cloud native; AWS delivers new and expanding services, director, engineering and IT operations, food delivery, Germany:**

“What AWS provides is the ability for us to grow what we can do with the cloud. That is another strength of their solutions — they keep expanding services.”

Based on interviews with EMEA AWS customers, IDC calculates that they will achieve benefits worth an annual average of € 26,000 per EC2 virtual instance (€25.04 million per organization; see Figure 3, next page) in the following areas:

▶ **IT staff productivity gains:**

Study participants have enabled IT teams such as infrastructure, help desk, security, and development teams to work more efficiently and effectively. For purposes of this analysis, IDC classified development team productivity gains as IT staff-related benefits, although improved development throughput and timeliness also clearly supports better business results. IDC projects that interviewed EMEA AWS customers will achieve staff efficiencies and productivity gains worth an annual average of €11,500 per EC2 virtual instance (€11.1 million per organization).

▶ **Business productivity benefits:**

Study participants reported that they have improved their business outcomes with AWS by better addressing and winning business opportunities. IDC puts the value of higher net revenue and productivity related to business enablement and risk mitigation at an average of €11,100 per EC2 virtual instance per year (€10.7 million per organization).

▶ **Risk mitigation benefits:**

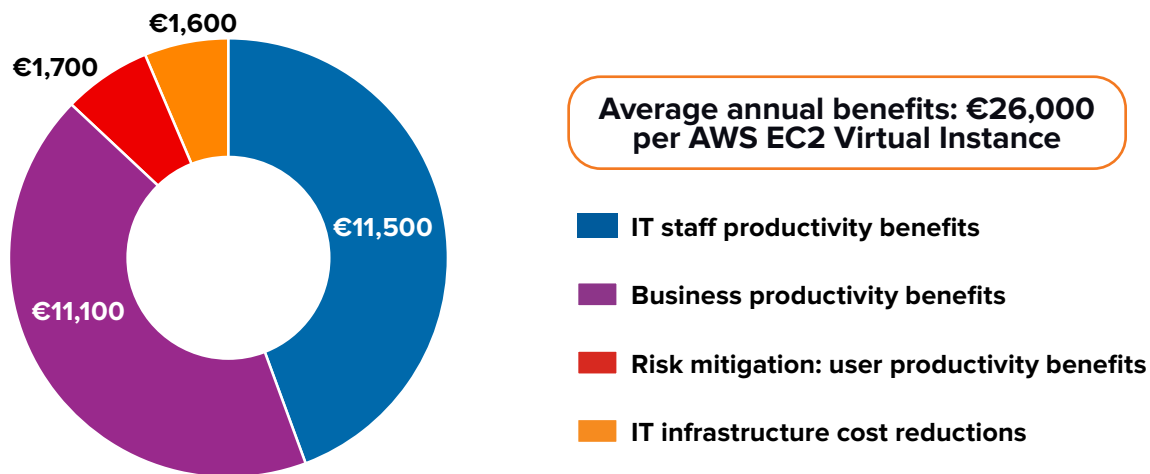
Study participants have minimized costs related to operational risk with AWS. IDC calculates that they will realize higher net revenue and employee productivity worth an average of €1,700 per EC2 virtual instance per year (€1.6 million per organization).

▶ **IT infrastructure cost reductions:**

Study participants have optimized the cost of providing compute, storage, and other infrastructure. IDC values cost savings and avoidances at an annual average of €1,600 per EC2 virtual instance per year (€1.6 million per organization).

FIGURE 3
Average Annual Benefits per EC2 Virtual Instance

(€ per EC2 virtual instance)



n = 12; Source: IDC in-depth interviews, September 2021

Lower Cost of Operations

The cost of providing IT resources to support business operations remains a critical consideration for most organizations. Containing costs requires both maximizing the value of provisioned IT resources, including compute, storage, and network capacity, and ensuring that IT teams work as efficiently and effectively as possible. Collectively, EMEA customers reported that AWS enables them to run equivalent workloads at a substantially lower cost than their previous on-premises infrastructure environments. Accordingly, IDC calculates that they will save an average of 50% in costs with AWS over five years (refer to **Figure 6**).

Optimizing Spending on IT Infrastructure Resources

Study participants spoke to the cost of using AWS and compared this with the cost of running equivalent workloads on on-premises environments. As a group, they reported substantial cost efficiencies in migrating workloads from on premises to AWS.

They derived infrastructure-related cost savings from benefits such as:

- ▶ The ability to better match capacity to use
- ▶ The ease and efficiency with which they can adopt new technologies such as containerization and microservices
- ▶ Enhanced visibility into actual usage
- ▶ Licensing efficiencies

Study participants provided specific examples of how they have leveraged AWS to reduce and optimize infrastructure costs:

- ▶ **Higher utilization rate; ability to bring on capacity by region as needed, head of IT, transportation, United Kingdom:**
“With AWS, we’ve improved our utilization rate by 25%. In general, AWS has improved our overall capacity and provisioning Our on-premises environment is a capable and mature infrastructure and has capacity flexibility on its own, but AWS still has advantages, though, like spinning up in other regions.”

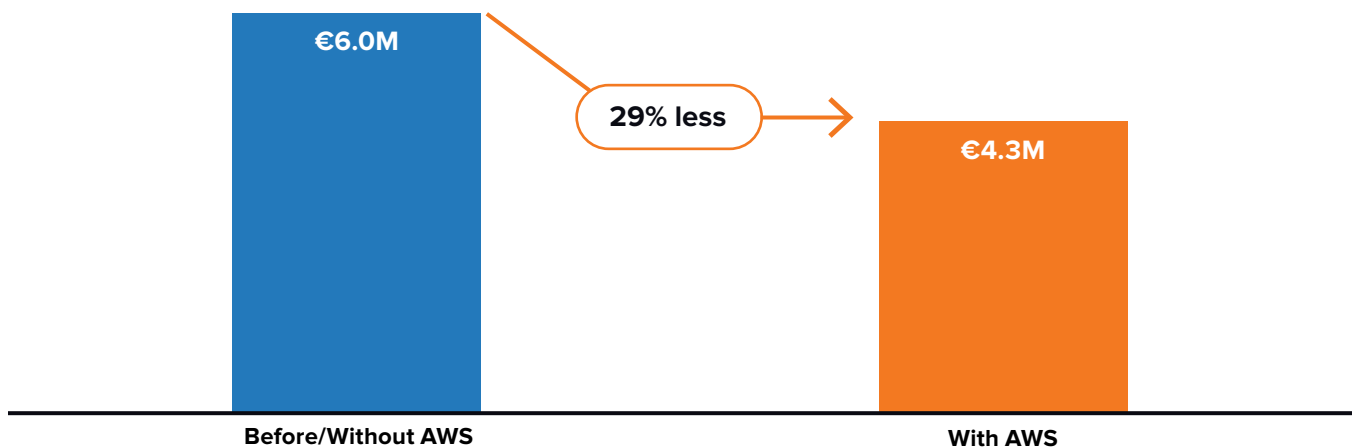
- ▶ **Ability to track costs by team/function, global IT director and CISO, manufacturing, United Kingdom:**
“We’re benefiting with AWS from being able to attribute cost and runtimes to specific teams, processes, and functions. This is critical for the company right now because of all the acquisitions we have recently made.”

- ▶ **Careful management enables significant infrastructure savings, CIO, publishing, Italy:**
“We are able to reduce our infrastructure costs with AWS — by 25–50% — provided we manage our usage carefully.”

Figure 4 demonstrates the annual infrastructure-related savings that study participants will realize through cost efficiencies enabled by AWS. On average, IDC calculates that organizations will save more than €1.7 million per organization per year, spending 29% less each year for the equivalent IT resources and workloads with AWS.

FIGURE 4
Annualized Infrastructure Costs

(€ per organization per year)



n = 12; Source: IDC in-depth interviews, September 2021

Empowering IT teams

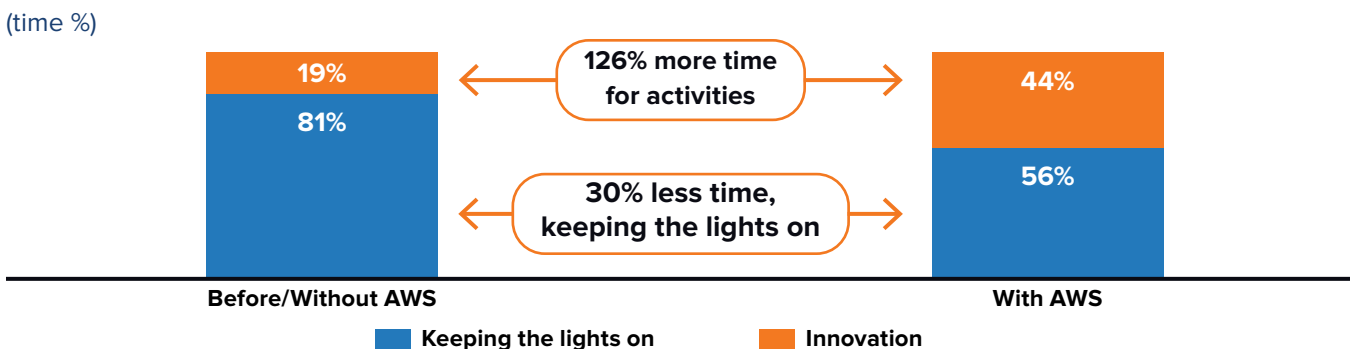
Interviewed EMEA organizations also reported significant efficiencies for their core IT infrastructure and administrative teams that complemented the cost efficiencies reported previously. They noted that their IT teams — which are responsible for running and administering the infrastructure and operations for many of their most important applications and customer-facing services — must spend much less time on routine day-to-day management and support tasks with AWS. Importantly, this leaves substantially more time available for profitable value-added activities. These staff efficiencies were attributed to AWS features and along with AWS direct support.

AWS customers focused on their ability to reallocate staff time and, in some cases, fundamentally change perceptions of IT within their broader organizations, providing numerous examples of both how AWS drives these changes and what the results have been:

- ▶ **Standardization; reallocation of time for projects, IT portfolio manager, utilities, United Kingdom:**
“Our IT activities are a lot more standardized now with AWS and the tasks are more about optimization. We have been able to put some cloud engineers onto project teams, whereas we didn’t have that flexibility before.”
- ▶ **Creating closer linkage with business, senior IT manager, resource management, Italy:**
“With AWS, we’ve been able to reduce and reorganize our infrastructure staff to create efficiencies We’ve reduced our IT infrastructure team by half, but we didn’t dismiss them; we reorganized and moved them closer to the business and have integrated some support staff within the business units.”

As shown in **Figure 5**, study participants’ IT and administrative teams struggled to find time to devote to innovative and other business-enabling activities before moving to AWS. As shown, they spent less than a fifth of their time on profitable innovation-focused activities compared with 81% of their time spent on more routine operational activities — keeping the lights on. However, with AWS, the time required for routine activities fell to just 56%, leaving nearly half of team members’ time available for innovation-focused activities. This equates to the benefit of having more than two times (126% more) time available for activities focused on innovation and business enablement.

FIGURE 5
Impact on IT Infrastructure and Administrative Team Activities



n = 12; Source: IDC in-depth interviews, September 2021

The IT and administrative team efficiencies enabled by AWS result in significant efficiencies and financial benefits for interviewed organizations that are quantified in **Table 3**. Average overall efficiencies for these teams of 44% translate to running equivalent workloads — including many business-critical and customer-facing applications and services — with 80 fewer full-time employees on average. When looking only at time required to “keep the lights on,” this efficiency is even more significant, at an average of 61% across interviewed AWS EMEA customers.

Individually, interviewed organizations called out efficiencies such as spending less time on incident management and the ability to more efficiently support business growth:

► **Orchestration means time savings, global IT director and CISO, manufacturing, United Kingdom:**

“We are spending less time on incident management with AWS because we orchestrate patching and updates. Previously, we had to provision for more time to manage vulnerabilities to stay current with new releases.”

► **Ability to support growing business efficiently, IT manager, media, UAE:**

“When we started our business, we supported traffic for 5,000 people, and now we support millions. And not just in the UAE, we also have our applications running in [other countries]. All of this would never even be possible in following the classic old way of hosting applications without AWS.”

TABLE 3
Impact on IT Infrastructure and Administration Teams

	Before/ Without AWS	With AWS	Difference	Benefit
Equivalent FTEs required for same workloads	183	103	80	44%
Staff hours per AWS EC2 virtual instance per year	358	202	156	44%
Value of equivalent FTE time required (€ per organization per year)	€15.4M	€8.7M	€6.7M	44%
Equivalent FTEs required for "keeping the lights on"	148	58	88	61%
Value of equivalent FTE time required for "keeping the lights on" (€ per organization per year)	€12.4M	€4.9M	€7.5M	61%

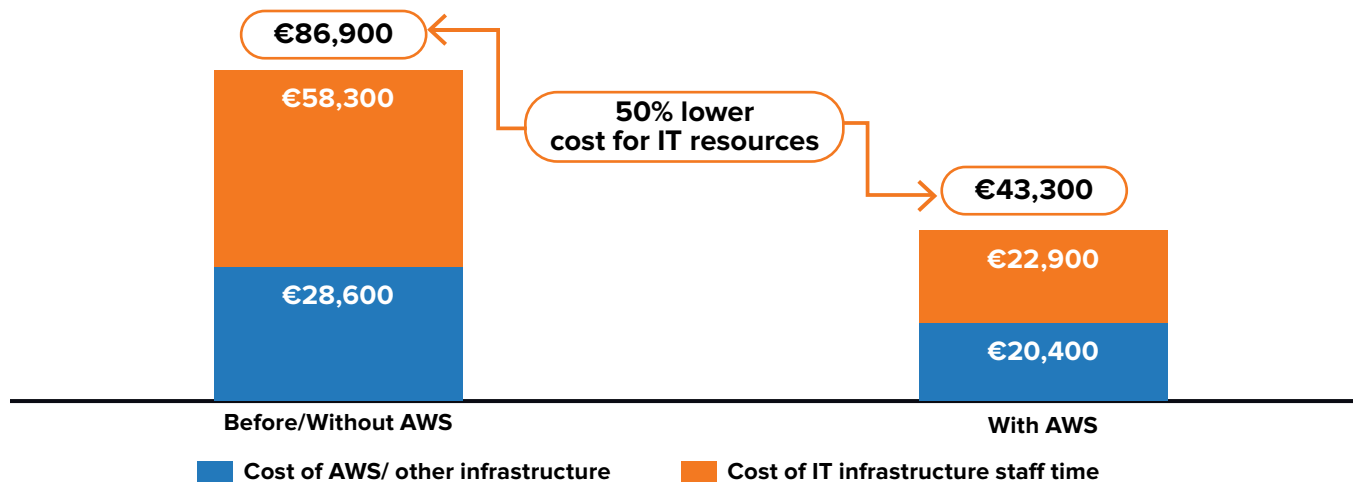
n = 12; Source: IDC in-depth interviews, September 2021

As noted previously, organizations participating in the study reported that AWS-enabled cost and staff efficiencies (measured based on time spent “keeping the lights on”) result in substantial cumulative operational cost savings and avoidances. On average, IDC projects that they will incur costs that will be 50% lower for IT resources and staff time with AWS, resulting in savings of €43,500 per AWS EC2 virtual instance (€42.0 million per organization) over a five-year period (see **Figure 6**).

FIGURE 6

Five-Year Cost of Operations per EC2 Virtual Instance

(€ per AWS EC2 virtual instance)



n = 12; Source: IDC in-depth interviews, September 2021

Improving the Capabilities of Development Teams

EMEA study participants also migrated applications to AWS with an eye on enhancing the agility, scalability, and flexibility of their IT operations. They reported that AWS has provided these benefits, enabling faster delivery of compute/storage resources to support business operations and enhancing the speed with which they can develop and deliver new software functionality. The foundation for this improved agility is study participants' ability with AWS to deliver compute, storage, and other resources to development teams and business operations with almost no friction. In many cases, this compares with on-premises environments with time-consuming and process-laden provisioning requirements.

Study participants spoke to the often dramatic change they have experienced with AWS:

► **Much more agile IT foundation, senior IT manager, resource management, Italy:**

“We’ve seen a 10x improvement in agility with AWS. It takes so much less time to deliver IT resources, and it is no problem taking them down when they are no longer needed.”

▶ **Seamless agility, digital chief architect, utilities, Germany:**

“With AWS, we can scale to the user’s needs. It’s quite seamless, so we can scale up and down our clusters almost in seconds It’s much, much faster and we can do it more often.”

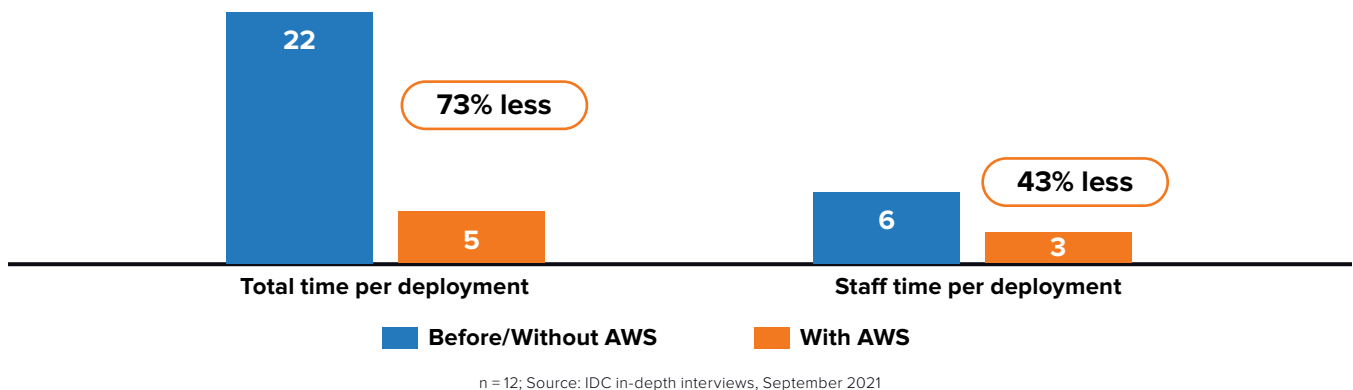
▶ **Access to capacity needed to handle business growth, IT lead, gambling, Latvia:**

“We have used AWS for expansion to increase our back-end capacity because we now have 10x more customers Because we can expand our infrastructure quickly on AWS to accommodate growth, we are getting more money from customers.”

Interviewed organizations have achieved notable gains related to their use of AWS in terms of core IT agility metrics. On average, they reported cutting the time to provision new compute and storage resources by an average 73% and total staff time required per deployment by almost half (43%) (see **Figure 7**).

FIGURE 7
Impact on IT Agility

(number of hours per deployment)



Interviewed EMEA organizations have translated enhanced IT agility and scalability with AWS into measurable improvements in the ability of development teams to deliver software functionality. They reported that AWS has enabled faster delivery cadences and more frequent upgrades of software capabilities and features. The head of IT at a transportation company in the United Kingdom explained: *“AWS helps us achieve a microservices model and leverage native technologies in AWS, such as Lambda, which helps us build more lightweight, streamlined applications. The overall cadence of releases and improvements has improved, which helps the business. We now have a continuous development cycle supporting the business ... a more agile approach to software development.”*

Table 4 (next page) depicts the impact on development activities for interviewed EMEA AWS customers. Importantly, they can not only deliver 63% more new applications but also do so faster with development life cycle for new applications reduced by 58% on average. Similarly, study participants can now support development of 78% more new features while releasing them 56% faster.

TABLE 4
Impact on Development KPIs

	Before/ Without AWS	With AWS	Difference	Benefit
New applications				
Number of new applications per year	5	8	2.9	63%
Development life cycle in weeks — new applications	21	8	12.0	58%
New features				
Number of new features per year	101	180	78.9	78%
Development life cycle in weeks — new features	3	1	2	56%

n = 12; Source: IDC in-depth interviews, September 2021

Study participants also spoke to other development-related metrics that provide further evidence of the extent to which AWS has enabled increased quality. For example, even as study participants release more new applications faster, they reported nearly a third fewer releases with defects, ensuring a higher-quality user experience for their customers and employees. Further, they have reduced staff time previously channeled toward defect remediation by more than half. Meanwhile, interviewed EMEA organizations also noted that they can better implement changes to match the speed of their business operations, with changes and updates happening 48% faster on average with AWS (see **Table 5**).

TABLE 5
Impact on Release KPIs

	Before/ Without AWS	With AWS	Difference	Benefit
Releases with errors/defects	6%	4%	2%	31%
Staff time in hours to address per error/defect	69	33	36	52%
Time required in days to make changes/updates to applications	2	1	1	48%

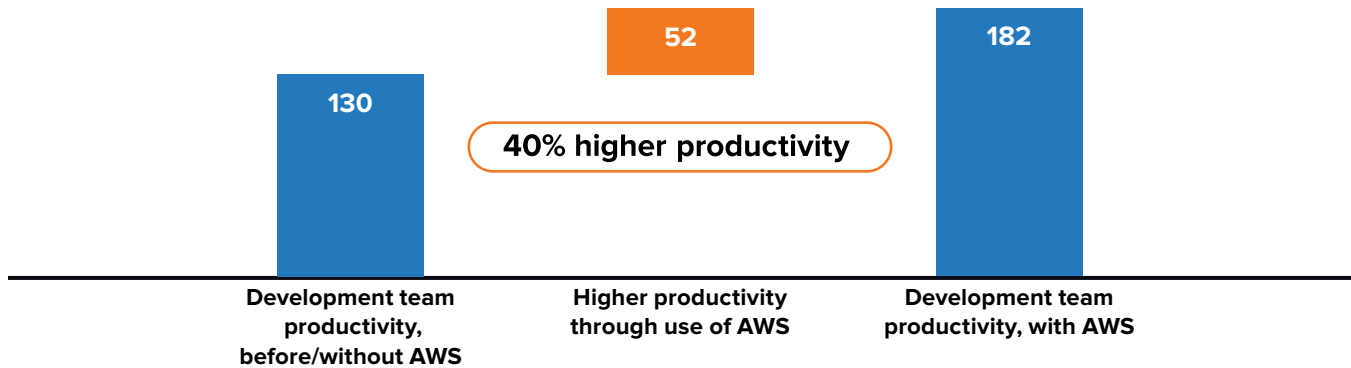
n = 12; Source: IDC in-depth interviews, September 2021

More effective development efforts for EMEA organizations as demonstrated through the metrics discussed previously mean that development teams generate more value for their organizations through the timely delivery of high-quality software functionality. For example, an IT director and CISO at a United Kingdom–based manufacturing company commented on development enablement: *“Before AWS, we only did OS development With AWS, we have begun to develop and deliver companion applications and subscription services. So it is a new area for us We have accelerated our time to market by two or three times with AWS.”*

Figure 8 provides a graphical depiction of the value that development teams at interviewed EMEA organizations achieve with AWS as a development platform. On average, IDC calculates that development teams are 40% more productive with AWS. What this means in practice for study participants is that their existing development teams provide far more value than they could previously, as they support business activities in a far more robust manner. IDC’s analysis on the impact on development teams from a cost perspective shows that study participants incur average staff costs that are 28% lower with AWS, reflecting the significant gains in development efficacy achieved.

FIGURE 8 Development Team Productivity Gains

(equivalent productivity — FTEs per organization)



n = 12; Source: IDC in-depth interviews, September 2021

Minimizing Operational Risk and Related Costs

Interviewed EMEA organizations also reported important user experience benefits from their use of AWS that include improved application performance, greater reliability, and uninterrupted access to applications and services. For many of the organizations, these benefits stood in contrast to experiences with on-premises environments; a number of interviewed organizations reported that the combination of aging infrastructures and staffs that were challenged to find time for updates led to IT infrastructures that not only suffered more unplanned business-impacting outages but also sometimes provided a suboptimal user experience, both of which exert real costs on business operations.

Study participants made clear that AWS has delivered the levels of availability and resiliency that their business operations require. They especially linked performance improvements to redundancy that AWS offers in a cost-effective manner, as well as the benefit of moving away from manual intervention, which can both be time consuming and cause errors.

Interviewed EMEA organizations provided specific examples of the impact of AWS in terms of performance and operational reliability:

▶ **Automation and resiliency reduce risk, director, engineering and IT operations, food delivery, Germany:**

“The risk-related improvements with AWS are the embedded resiliencies in Aurora. By default, all the backup is there. We have a lot of functionality in terms of resiliency and redundancy, which saves us time and effort.”

▶ **Much higher availability, CIO, publishing, Italy:**

“For our on-premises environment, we had some downtime — I am just talking about serious problems, not just interruptions We have had none on AWS. We have much higher availability with AWS compared to our on-premises datacenter, and this was our primary reason for going with AWS.”

▶ **Robust security baseline, IT manager, media, UAE:**

“With AWS, we are secured against many things like the DDoS attacks, SSL certificates, and we are also running our DNS on AWS. In general, the access and permission on the AWS system are very granular, and people with experience can easily navigate and grant access depending on what’s needed.”

Interviewed organizations have minimized the operational and business impact of unplanned outages to a significant extent with AWS (see **Table 6**, next page). They reported experiencing 66% fewer unplanned outages with AWS while needing 62% less time to recover from outages that still occur. Correspondingly, they face much lower losses due to unplanned outages in terms of lost employee productivity and revenue. IDC calculates that they lose about only half as much productive employee time (41%), meaning that their employees can work at full productivity more often with less concern about disruption. Meanwhile, study participants reported achieving very substantial value from avoiding revenue losses related to service and systems outages, reducing these business losses by an average of 87%, which is worth €9.8 million per year in higher revenue.

TABLE 6
Impact on Unplanned Downtime KPIs

	Before/ Without AWS	With AWS	Difference	Benefit
Number of unplanned outages per year	25	9	17	66%
Mean time to repair (hours)	5	2	3	62%
Hours of productive time lost per user per year	5	3	2	41%
Productivity loss per year in FTEs per organization	10	6	4	41%
Value of lost productivity time per organization per year	€557,800	€330,200	€227,600	41%
Value of lost revenue per year per organization	€11.2M	€1.4M	€9.8M	87%

n = 12; Source: IDC in-depth interviews, September 2021

Realizing Better Business Results

Interviewed EMEA organizations reported that moving applications to AWS has brought benefits for their businesses as they gain from enhanced agility, scalability, and performance. As a result, they can not only provide a better experience for existing customers with AWS but also move faster to address and win business opportunities as they arise. Further, use of AWS has offered the opportunity to adopt and leverage new technologies, including artificial intelligence (AI) and ML, that benefit both existing and expanded business models. Specific benefits of AWS include improved ability to accommodate both sustained growth and temporary bursts of demand, along with the leveraging of cutting-edge technologies such as analytics and machine learning.

Study participants provided examples of how AWS has enabled them to better run their businesses:

▶ **Flexible access to capacity needed for uneven business demand, director, engineering and IT operations, food delivery, Germany:**

“Our business has both growth bursts and sustained growth. Having AWS for our infrastructure has enabled us to meet the growth and the demand. During COVID-19, our business has shot up even faster than it had been. Matching that demand, sustaining that growth would be extremely difficult with a traditional infrastructure.”

▶ **Scalability to match business growth, head of IT, transportation, United Kingdom:**

“With AWS, we can now scale our operations as we grow our business internationally. We are no longer constrained by infrastructure capabilities and our operations are standardized on AWS.”

Organizations provided numerous examples of direct business benefits related to their use of AWS. These benefits relate back to factors such as scaling with ease to meet fluctuating business demand, bringing new services to market faster, and providing new and existing customers with superior product and service performance. Further, while IDC classified development team productivity gains as IT staff benefits for this study, enhanced development capabilities often lead directly to improved ability to address and win business opportunities.

Interviewed EMEA customers provided examples:

- ▶ **Faster to respond to business opportunities, digital chief architect, utilities, Germany:**
“Addressing our business queues is much faster with AWS, so we’re more able to be the forerunner with new ideas. As a result, our revenue goes up of course — 5% more revenue.”
- ▶ **Much faster development cadence for business-generating services, head of IT, transportation, United Kingdom:**
“Our mean time to releasing a service has been cut dramatically with AWS, going from five to six months to two to three months — half the time and half the aggregation of staff work. That means agility for business as well.”

AWS-enabled business benefits translate to improved top-line and bottom-line numbers for organizations participating in the study. As shown in **Table 7**, IDC calculates that interviewed EMEA customers will realize increased revenue of €77.0 million per year per organization on average, which equates to €79,800 per AWS EC2 virtual instance. IDC uses a 15% margin assumption for purposes of valuing total revenue gains for its financial model, which results in net revenue gains worth an average of €11.5 million per organization (€12,000 per AWS virtual instance) (see **Appendix A: Methodology** for more details about IDC’s methodology and the 15% margin assumption).

TABLE 7

Business Productivity Benefits — Higher Revenue

	Per Organization	Per EC2 Virtual Instance
Revenue impact		
Total additional revenue per year	€77.0M	€79,800
Assumed operating margin	15%	15%
Total additional net revenue per year*	€11.5M	€12,000

n = 12; Source: IDC in-depth interviews, September 2021

ROI Summary

Table 8 presents IDC's analysis of the financial benefits and costs related to the use of Amazon Web Services by interviewed EMEA organizations. IDC calculates that on a per-organization basis, they will achieve total discounted five-year benefits of €88.0 million, or €91,300 per AWS EC2 virtual instance in higher revenue, reduced operational risk, IT staff efficiencies and productivity gains, and lower IT infrastructure costs. These benefits compare with projected total discounted investment costs over five years of €17.61 million per organization (€18,300 per AWS EC2 virtual instance). At these levels of benefits and investment costs, IDC projects that interviewed EMEA organizations will achieve a five-year ROI of 400% and break even on their investment in AWS in eight months.

TABLE 8
Five-Year ROI Analysis

	Average per Organization	Average per EC2 Virtual Instance
Benefit (discounted)	€88.0M	€91,300
Investment (discounted)	€17.6M	€18,300
Net present value (NPV)	€70.4M	€73,000
Return on investment (ROI)	400%	400%
Payback period	8 months	8 months
Discount rate	12%	12%

n = 12; Source: IDC in-depth interviews, September 2021

Challenges/Opportunities

In pursuing digital innovation and making decisions regarding cloud adoption, IDC sees organizations successfully addressing the following challenges:

- ▶ Speed of provisioning infrastructure and moving from an IT ticket request type of process to self-service, thereby empowering development teams to move quickly
- ▶ Ability to (and speed of) scaling the infrastructure up and down with containerization and serverless, thereby reducing overhead costs significantly
- ▶ Team size efficiencies for automated patching and updates, enabling the need for fewer people even as infrastructure capacity grows
- ▶ Minimizing costs and staff time related to unplanned outages and security issues, allowing their time to be more productively engaged

- ▶ Enabling innovation with machine learning and artificial intelligence to create competitive differentiation, deliver cost savings, and increase revenue
- ▶ Empowering developers to delivering new applications and functionality to market rapidly (e.g., within three months instead of six or in days/weeks instead of months)
- ▶ Needing flawless operation and getting attention from executives, not because of outages, but for enabling the business

Successfully addressing these challenges represents direct lines of questioning for cloud providers as you align technology and architecture decisions with the overarching digital strategy of your organization.

Conclusion

The new fundamentals for cloud include more rapid adoption of a diverse set of service options, greater concerns about protecting cloud ecosystems, and expanded focus on the cloud transition process, including ongoing governance. Shared (public) cloud as a service for infrastructure (IaaS) and platforms (PaaS), along with various software-as-a-service (SaaS) offerings, continue to be the largest, and fastest increasing, engines of growth for the entire cloud market. AWS remains a market share leader in the worldwide public cloud IaaS and PaaS markets, representing 46% and 15% of global market share, respectively, in 2020.

IDC's research confirms the significant value that EMEA organizations can achieve by using AWS as a platform for their business operations. Study participants described leveraging AWS to make their IT operations more agile, scalable, and cost effective even as they improve their ability to respond to new business opportunities and generate more value for their customers. As a result, interviewed AWS customers in EMEA have not only significantly reduced the cost of providing IT resources to their business operations compared with on-premises infrastructures but also captured substantial value from revenue and productivity gains. IDC analysis projects that study participants will realize benefits through their use of AWS worth five times total investment costs over five years, which would result in an average five-year ROI of 400% and breakeven on their investment in AWS in an average of eight months.

Appendix A:

Methodology

IDC's standard Business Value/ROI methodology was utilized for this project. This methodology is based on gathering data from organizations currently using Amazon Web Services solutions as the foundation for the model.

Based on interviews with organizations using AWS, IDC performed a three-step process to calculate the ROI and payback period:

- 1. Gathered quantitative benefit information during the interviews using a before-and-after assessment of the impact of using Amazon Web Services.** In this study, the benefits included IT infrastructure cost savings, IT staff and development team efficiencies and productivity gains, reduced costs associated with risk, and higher revenue.
- 2. Created a complete investment (five-year total cost analysis) profile based on the interviews.** Investments go beyond the initial and annual costs of using Amazon Web Services and can include additional costs related to migrations, planning, consulting, and staff or user training.
- 3. Calculated the ROI and payback period.** IDC conducted a depreciated cash flow analysis of the benefits and investments for the organizations' use of Amazon Web Services over a five-year period. ROI is the ratio of the net present value (NPV) and the discounted investment. The payback period is the point at which cumulative benefits equal the initial investment.

IDC bases the payback period and ROI calculations on a number of assumptions, which are summarized as follows:

- ▶ Time values are multiplied by burdened salary (salary + 28% for benefits and overhead) to quantify efficiency and manager productivity savings. For purposes of this analysis, based on the geographic locations of the interviewed organizations, IDC has used assumptions of an average fully loaded salary of \$100,000 per year for IT staff members and an average fully loaded salary of \$70,000 per year for non-IT staff members. IDC assumes that employees work 1,880 hours per year (47 weeks x 40 hours). These salary assumptions were converted to euro using the average 2021 exchange rate of \$1.2 = €1. This exchange rate assumption was also used in converting other values from USD to euro.
- ▶ The net present value of the five-year savings is calculated by subtracting the amount that would have been realized by investing the original sum in an instrument yielding a 12% return to allow for the missed opportunity cost. This accounts for both the assumed cost of money and the assumed rate of return.
- ▶ Because every hour of downtime does not equate to a lost hour of productivity or revenue generation, IDC attributes only a fraction of the result to savings. As part of our assessment, we asked each company what fraction of downtime hours to use in calculating productivity savings and assumed a margin for recognizing additional revenue (15%). IDC then taxes the downtime productivity savings and revenue at those rates.

- ▶ IDC applies the same margin assumption (15%) for other user productivity gains and additional gross revenue attributed to interviewed organizations' use of AWS resulting in the net productivity and revenue calculations applied to IDC's model.
- ▶ Because IT solutions require a deployment period, the full benefits of the solution are not available during deployment. To capture this reality, IDC prorates the benefits on a monthly basis and then subtracts the deployment time from the first-year savings.

Note: All numbers in this document may be inexact due to rounding.

Appendix B:

Additional Quotes

Selected additional quotes from interviews with EMEA organizations using AWS are:

- ▶ **Simplify provisioning and consolidate IT environment, global IT director and CISO, manufacturing, United Kingdom:**
"We had recently acquired a few businesses and had to reengineer some of the applications for the new businesses. That led us to make the decision that the best thing to do would be to make them cloud native and move those operations to the cloud to simplify provisioning with AWS. Also, we wanted to consolidate and move away from sprawling datacenters."
- ▶ **Staffing efficiencies and improved ability to test and operate leading-edge technologies, global IT director and CISO, manufacturing, United Kingdom:**
"The staffing efficiencies with AWS are beneficial to our support staff and our R&D teams. The overarching one is that it gives our teams a lot of freedom to try new things, much more than we could with traditional infrastructure. A lot of our product is leading edge, with quite complex features. We can test and solve problems easier and more efficiently."
- ▶ **Cost-effective use through scalability; move away from running datacenters, head of technology, retail, United Kingdom:**
"We are optimizing our infrastructure spending with AWS, particularly around scaling and provisioning. It has also enabled us to close multiple datacenters, probably sooner than we anticipated."
- ▶ **Visibility and AWS support for optimizing use, director, engineering and IT operations, food delivery, Germany:**
"We are constantly growing our AWS usage as the company expands, but there are positives in the relationship such as good discounts depending on the database or EC2 As I mentioned earlier, the cost reporting functionality gives valuable insights on our usage and how we can save money and make better use of our resources, whether it be EC2 or the databases — we can save here or we can save there. AWS takes an active role in the relationship."

▶ **Reinvesting efficiencies to create more value with cloud, director, engineering and IT operations, food delivery, Germany:**

“We spend much less time on capacity management with AWS than we would with an on-premises solution or even a private cloud. We are extremely efficient in monitoring and management running on AWS With the time savings, we are learning more about cloud, diving more deeply into the technology, helping with our growth, improving processes, planning, and project work.”

▶ **Scalability and agility to match speed of business, IT lead, gambling, Latvia:**

“When we run out of storage on premises, we need to clean up or install new storage, and we cannot get this capacity on time. With AWS, it’s two clicks and we have capacity. Our business is expanding, and it is difficult right now to get hardware and equipment on time when we need it to spin them up and continue our growth We get 10x the scalability or agility, so that is the benefit AWS is giving us.”

▶ **Improved performance and reliability core value of AWS, head of technology, retail, United Kingdom:**

“The benefits with AWS are more about the convenience and reliability. We save money not supporting so much on premises, but The cost is not as important as what we get for our investment — which is better performance and greater reliability.”

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Dr. Lara Greden is Research Director for IDC's Platform as a Service (PaaS) practice. Lara research focuses on platforms for application development on private, public, and hybrid clouds and on edge deployments. She directs research into the competitive markets of cloud platforms and application development and deployment services that are enabling digital transformation, including integration, containers, serverless computing, big data, AI, ML, predictive analytics, IoT, and other emerging technologies.

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