IDC
ANALYZE THE FUTURE

The Infrastructure Cost and Staff Productivity Benefits of Running High-Performing Windows Workloads in the AWS Cloud

SITUATION OVERVIEW

AWS has been providing cloud services longer than any other cloud service provider and continues to be a cloud destination of choice for organizations undergoing modernization and digital transformation. A decision to move business-critical assets to the cloud requires detailed planning, an awareness of the current environment, and strategic alignment with where the business is headed in the future. In the early days of cloud migration, businesses were mainly focused on anticipated IT cost savings coming from reduced capital investment in supporting infrastructure. As the business reaches higher levels of cloud maturity, they experience improved performance resulting from greater efficiency, speed, flexibility, and superior security.

While cost is always an important consideration, the improved data security, business agility, and simplification of the overall IT landscape afforded by AWS are the most frequently cited drivers of cloud workload migration. Businesses benefit from the added convenience and significant cost savings compared to running these workloads in their own data centers. Running Windows workloads in the cloud enables IT organizations to rapidly deliver new services to the business that result in better customer and employee service experiences.

OVERVIEW OF WINDOWS WORKLOADS ON AMAZON WEB SERVICES

Windows workloads continue to be the foundation of most organizations. Business-critical workloads like SQL Server, Windows Server, .NET Solutions, and Active Directory require higher levels of security to protect sensitive customer data. Having a robust and secure infrastructure is essential for these types of workloads. The applications and data included in these workloads are accessed frequently by large numbers of users across business domains and must be consistently available wherever and whenever needed. In 2008, AWS launched a portfolio of services designed to support many Windows workloads.

IDC
ANALYZE THE FUTURE

Businesses can choose from a wide variety of virtual server instance types, each with different performance characteristics across compute, networking, memory, and storage. There are different licensing options to help businesses optimize the cost of running Windows workloads on the AWS cloud, including purchasing licenses from AWS with consumption pricing, and "bring your own license". AWS also provides pre-configured Amazon Machine Images (AMIs), with different versions of Microsoft software licenses included, such Windows Server and SQL Server.

For database workloads, businesses can use Amazon Elastic Compute Cloud (EC2) and Amazon Elastic Block Store (EBS) to run their SQL Server instances. Businesses can also use Amazon Relational Database Service (RDS) to run their SQL Server databases as a managed service.

THE BUSINESS VALUE OF WINDOWS WORKLOADS ON AWS

Study Demographics

IDC conducted in-depth interviews with 12 organizations that are running various Windows workloads, including enterprise application workloads, database workloads, and custom applications, in the AWS cloud. Interviews were designed to understand the impact for these organizations of running these Windows workloads on AWS compared with their previous IT infrastructure environments. On average, interviewed organizations were large, with more than 28,000 employees and almost $5 billion per year in revenue. They provided insights from a variety of industry verticals, including the Food & Beverage, Government, Healthcare (3), Higher Education, Manufacturing (2), Retail, Telecommunications, Transportation (2) vertical sectors (See Table 1 for additional details).

TABLE 1 Demographics of Interviewed Organizations

	Average	Median
Number of employees	28,579	6,750
Number of IT staff	1,581	250
Number of business applications	149	150
Revenue per year	$4.65 billion	$1.5 billion
Country	United States	
Industries	Food and beverage, government, healthcare (3), higher education, manufacturing (2), retail, telecommunications, transportation (2)	

n=12   Source: IDC, 2019

Choice of AWS for Running Windows Workloads

Most study participants moved Windows to AWS from legacy on-premises environments, although several also migrated systems in part from other public cloud environments. Study participants' reasons for choosing AWS varied, but interviewees returned to themes such as cost, robustness, security, management, and performance. For example, several interviewees explained the choice of AWS:

- **Healthcare organization:** *"We needed to get away from our on-premises environment for a variety of reasons - mostly for data security - and we were long overdue for this move because our servers were breaking regularly. AWS gave us the best pricing, and we felt their security measures were more far-reaching."*

- **Food and beverage organization:** *"We chose AWS for our Windows workloads because it has a more robust infrastructure, and in the cloud space, it's the outright leader. . . Amazon won out because of their breadth of services, security minded configurations, number of datacenters, and built-in redundancy."*

As shown in Table 2, study participants have moved significant Windows workloads to the Amazon cloud, using 112 AWS EC2 server instances on average and spending almost $1 million per year. These organizations reported running diverse Windows workloads on AWS, including collaboration, database, analytics, enterprise resource, and custom applications.

TABLE 2 AWS Use by Interviewed Organizations

	Average	Range
Spend per year on AWS	$976,300	$235,000
Number of Amazon EC2 server instances (average)	112	13
Number of Amazon EC2 instances for SQL	27	9
Number of Amazon RDS databases	38	7
Number of terabytes	133	25
Number of applications	43	5
Number of internal IT users	4,185	2,500

n=12   Source: IDC, 2019

# Quantifying Infrastructure Cost and Staff Productivity Benefits From Running Windows Workloads on AWS

IDC's research demonstrates that, by moving Windows workloads to AWS, study participants better address business opportunities and provide their employees with higher-performing and more timely applications and features. IDC puts the value of resultant higher productivity and revenue at an annual average of $84,700 per 100 users ($3.46 million per organization).

Infrastructure Cost Savings

A number of interviewed organizations said that moving away from building and maintaining on-premises infrastructure environments as a catalyst in their decision to migrate Windows workloads to AWS. These organizations concluded that they were not only taking on costs related to buying and maintaining hardware, but also incurring inefficiencies in the use of IT capacity and licensing. Thus, AWS has offered the opportunity to not only change how they pay for the IT infrastructure running their Windows workloads by moving to an OpEx cost model but to also reduce their overall costs through reuse of and "bring your own" licenses, as well as more targeted use of compute, storage, and database capacity. As a result, the AWS customers interviewed for this study reported paying 37% less on an annualized basis than for comparable workloads with their previous IT environments (Figure 1). Interviewed organizations described these types of cost efficiencies:

- **Food & Beverage organization:** *"We definitely go 'on the cheap' to start with AWS because it's easy just to add extra storage per server instance in seconds. We will spin up a workload with what we feel is the minimum, and then add to it as needed. It definitely has put us in a better place to utilize resources regarding services and infrastructure."*

- **Healthcare organization:** *"Licensing cost efficiencies was one of the reasons we went to the cloud with AWS. The way that you collaborate these licensing contracts through AWS for software licenses vs. having to buy the licenses on our own has already been more cost effective for us. We're saving 10%."*

FIGURE 1 Five-Year IT Infrastructure Costs

n=12   Source: IDC, 2019
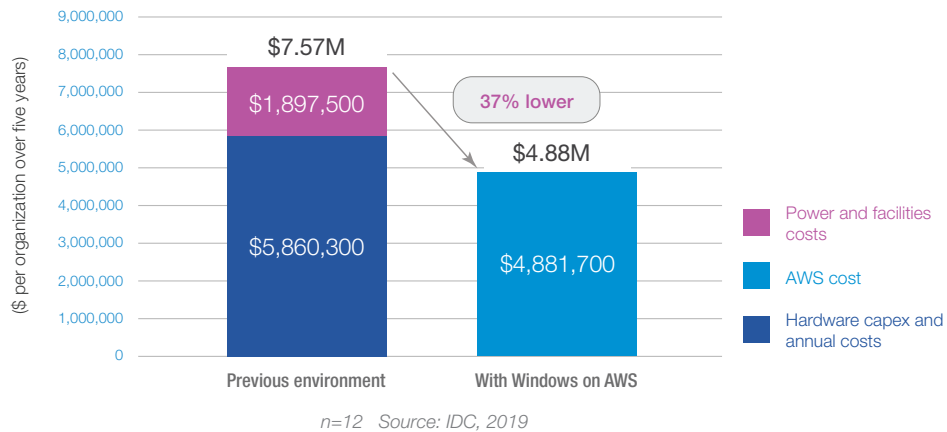
IT Staff Productivity Benefits

Study participants consistently cited IT staff efficiencies as one of the most important benefits of moving Windows workloads to AWS. Running Windows workloads that include enterprise, database, and custom applications requires effort from a number of IT teams, including IT infrastructure, application management, helpdesk, database administrator, and IT security teams. For interviewed organizations, running Windows workloads on their legacy on-premises environments often required too much of these teams' time, leaving them unable to support forward-looking IT and business initiatives. In particular, these teams were burdened with manual processes related to monitoring, patching, updating, securing, and provisioning for Windows workloads. In many cases, this meant that IT teams could not focus on innovation and driving strategic initiatives to the extent that their changing businesses require.

Interviewed organizations uniformly reported that moving Windows workloads to AWS has reduced the burden and enabled IT teams to better align and support strategic activities. They not only benefit from not needing to maintain and support on-premises infrastructure, but they can leverage AWS platform automation and other built-in features. The result is substantial across-the-board efficiencies, including a 75% efficiency improvement for IT infrastructure teams, 59% for IT security teams, and an average efficiency of 47% across all teams. (See Table 3)

Interviewed organizations stressed that these efficiencies empower IT teams to reallocate and dedicate staff time to activities and projects related to innovation. Almost every interviewed organization provided specific examples of how their IT teams are leveraging efficiencies with AWS to deliver more value to their organizations, including:

- **Healthcare organization:** *"The amount of time that we're spending on managing Windows applications now with AWS vs. on-premises servers is minimal. . . It's allowed our team to work on other IT infrastructure upgrades. Our team can now spend 60-70% of their time available to work on these infrastructure and enterprise software projects."*

- **Transportation organization:** *"With AWS, we say around here: 'set it and forget it'. Our server administrators work to deploy applications in AWS, which they do one time to get it going, and it works. . . AWS has allowed them to work on other projects."*

- **Food & Beverage organization:** *"Our IT infrastructure team is definitely spending more time engineering with AWS. . . This gave us a competitive advantage when they started designing redundant fault tolerant systems."*

TABLE 3 IT Staff Impact with AWS

	Previous Environment	With Windows on AWS	Increased Value with AWS	Efficiency with AWS (%)
IT infrastructure management (FTEs)	10.3	2.6	7.7	75
Application management (FTEs)	8.7	5.7	3.0	34
IT support (FTEs)	6.5	4.6	1.9	30
DBAs (FTEs)	3.9	2.8	1.2	30
IT security (FTEs)	1.9	0.8	1.1	59
Overall (FTEs)	31.3	16.5	14.9	47

n=12   Source: IDC, 2019

Increased Business Agility and More Effective Development

Study participants reported that their move to the AWS cloud for Windows workloads has substantially improved the agility and flexibility of their IT operations. These organizations too often found with their legacy environments that they either had to overprovision infrastructure or justify purchases on an ongoing basis. In other words, they had to choose between a cost-inefficient setup or risk not meeting business demand in a timely manner. Given the significance of Windows workloads to their businesses, neither option was satisfactory.

However, study participants have made significant strides to ensure that their IT operations are flexible from both a cost and agility perspective with AWS. They reported benefiting from being able to add compute, storage, or database resources on short notice, and from requiring less time to carry out deployments. Interviewed AWS customers described these advantages:

- **Healthcare organization:** *"With AWS, we can scale up or down on a moment's notice. And we know that everything is going to be consistent without having to stress over it."*

- **Telecommunications organization:** *"Before AWS, adding storage was a capital budget request, which could take 2-3 months. Now, it's in our operations budget, so we don't have to get approval, and it takes 1 hour."*

For interviewed organizations, increased agility in their IT environments with AWS is reflected in the metrics in Table 4, including requiring far less staff time to deploy new compute resources (71% less), new storage resources (65% less), and new databases (71% less).

TABLE 4 IT Agility Metrics with AWS

	Previous Environment	With Windows on AWS	Difference	Change (%)
Staff time to deploy new compute (hours)	5.6	1.6	4.0	71
Staff time to deploy new storage (hours)	2.8	1.0	1.8	65
Staff time to deploy new database (hours)	10.9	3.1	7.8	71

n=12   Source: IDC, 2019

Greater IT agility with AWS serves various teams at interviewed organizations, including development teams supporting Windows applications and workloads. Having constant and seamless access to resources for testing and deployment activities is especially beneficial and helps development teams speed up development cadence and ultimately increases the value of their work. Table 5 reflects the extent to which AWS has enabled their efforts, including delivering more new applications (110% more) and new features (64%) in less time (41% and 47% faster development lifecycles for new applications and new features, respectively). This results in an average productivity gain of 26% for Windows-related developers at these organizations.

Interviewees spoke to the impact of developing on the AWS cloud:

- **Manufacturing organization**: *"With AWS, we can now spin up new environments and give autonomy to our development team to play and to explore. . . Now, with CloudFormation on AWS, we spin up sites at will. It definitely makes us more agile."*

- **Food & Beverage organization:** *"With AWS, our development teams can spin up instances at will. When they need to expand our infrastructure, it has greatly increased their ability to create and develop new and exciting features, like more proactive infrastructure development."*

TABLE 5 Application Development KPIs with AWS

	Previous Environment	With Windows on AWS	Difference	Change (%)
New applications and new logic				
Number of new applications/logic developed per year	5.0	10.5	5.5	110
Development life cycle (weeks)	11.2	6.6	4.6	41
New features				
Number of features developed per year	17.2	28.2	11.0	64
Development life cycle (weeks)	2.2	1.2	1.0	47
Application development team productivity				
Equivalent productivity level per organization (FTEs)	12.2	15.4	3.2	26

n=12   Source: IDC, 2019

CONCLUSION

Windows workloads remain business-critical for most organizations and thus require a robust and secure infrastructure. Meanwhile, users of these applications have increasing expectations regarding performance, functionality, and mobile access, while continued data growth and high user experience expectations has put pressure on IT costs and staffing requirements. These combined trends have spurred IT organizations to look at new approaches to delivering Windows workloads, including running them in the public cloud.

IDC's study demonstrates the strong value that interviewed organizations are achieving by migrating and running substantial Windows workloads in the AWS cloud. These AWS customers reported not only reducing the cost of running their Windows applications, but also capturing significant value through enabling their IT and business operations with efficiencies, flexibility, and improved performance.

For the full IDC report, visit this page.

APPENDIX: METHODOLOGY

IDC's standard ROI methodology was utilized for this project. This methodology is based on gathering data from organizations currently using AWS to run Windows workloads as the foundation for the model. Based on interviews with these study participants, IDC performs a three-step process to calculate the ROI and payback period:

● Measure the benefits associated with using AWS for Windows workloads in terms of: infrastructure-related cost savings, IT staff efficiency and productivity benefits, higher user productivity, and increased revenue.

● Ascertain the investment made in deploying and using AWS.

● Project the costs and benefits over a five-year period and calculate the ROI and payback for AWS.

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, IDC has used its standard Business Value assumptions of an average fully-loaded $100,000 per year salary for IT staff members, and an average fully-loaded salary of $70,000 for non-IT staff members. IDC assumes that employees work 1,880 hours per year (47 weeks x 40 hours).

● Downtime values are a product of the number of hours of downtime multiplied by the number of users affected.

● The impact of unplanned downtime is quantified in terms of impaired end-user productivity and lost revenue.

● Lost productivity is a product of downtime multiplied by burdened salary.

● 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 the reduction in lost revenue. IDC then taxes the revenue at that rate.

- Further, because IT solutions require a deployment period, the full benefits of use of AWS 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 not be exact due to rounding.

IDC Global Headquarters

5 Speen Street
Framingham, MA 01701
USA
508.872.8200
Twitter: @IDC
idc-insights-community.com
www.idc.com

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.