The Total Economic Impact™ Of AWS Managed Services

Cost Savings And Business Benefits Enabled By AWS

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Project Director:
Julia Fadzeyeva

Project Contributor:
Sanitra Desai

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Investment Benefits:

Resource cost avoidance:
$3.2 million

Cost savings from accelerated migration to the cloud:
$2.3 million

Optimized resource efficiency gains:
$872.5K

Cost savings from avoided management infrastructure fees:
$2.9 million

Executive Summary

Today's metric for cloud success isn't cost efficiency or even business agility, but rather the speed of business transformation. Cloud is more than a technology transformation driver — it's a business transformation accelerator.[1]

Customer-obsessed companies build compelling experiences through software innovation, and the operations teams must keep up by aggressively automating out the manual labor required for infrastructure provisioning, configuration, change and compliance management.[2] Migration to the cloud is the first step, inevitably followed by setting up cloud operations. However, most companies lack the skills, tools, and time to plan for, coordinate, execute, and optimize both migration and ongoing cloud management. Recruiting and retaining staff with necessary knowledge is difficult, and the pressure to move quickly requires that infrastructure and operations (I&O) professionals look to external services suppliers for help.[3]

AWS Managed Services (AMS) provides cloud operations services and accelerates migrations at scale to help AWS customers navigate the digital transformation process from planning through ongoing operations. AMS offers tools and skilled resources that help customers achieve operational excellence through consistent enforcement of security best practices, improved patch rates, reduced number of incidents, and built-in compliance certifications for PCI, ISO, SOC, HIPAA, FedRAMP, HITRUST, DPC, CIS, and GDPR. AWS commissioned Forrester Consulting to conduct a Total Economic Impact™ (TEI) study and examine the potential return on investment (ROI) enterprises may realize by working with AWS Managed Services. The purpose of this study is to provide readers with a framework to evaluate the potential financial impact of working with AMS on their organizations.

To better understand the benefits, costs, and risks associated with this investment, Forrester interviewed six customers with up to two years of experience working with AMS. The structured approach, experienced team, and automated tools enabled interviewed organizations to avoid the expense of hiring costly cloud engineers and architects, helped optimize the use of existing operations resources, helped avoid the cost of additional management infrastructure, strengthened the organizational risk profile, and contributed to higher revenue with increased uptime.

The interviewed customers evaluated whether or not running the migration and operating their cloud environments themselves and using existing in-house resources would have allowed them to achieve their digital transformation goals (including speed, cost, security, and uptime) without distracting their engineering talent from core business objectives. After careful consideration, these customers determined that executing their own migrations and ongoing operations would divert them from business innovation, it would be too slow and too costly, and it would deliver a suboptimal outcome, instead of a 243% ROI.

Key Findings

Quantified benefits. The following risk-adjusted present value (PV) quantified benefits are representative of those experienced by the companies interviewed and a composite organization based on characteristics of those companies:

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ROI
243%

Benefits PV
$10.8 million

NPV
$7.7 million

A software company expected to invest up to **$1.5 million** in talent if it was to perform the migration and operations on its own. And it expected that the hiring and onboarding process would take **100 to 150 business days** before it could get started.

An executive general manager for infrastructure at a financial organization explained that hiring talent, preparing the landing zone, and ensuring compliance and governance guardrails would be a **multimillion-dollar** people investment.

A financial services organization told Forrester that its average data center costs per application postmigration were **reduced by 90%,** and AMS allowed them to recognize these savings sooner.

› **Eliminated need to hire new cloud resources yielded almost $3.2 million in cost savings.** Running the project in-house was the alternative to AMS-led cloud migration and management. For the interviewed organizations, this would have required hiring the equivalent of 10 FTEs who possess cloud expertise and then keeping them on staff to run cloud operations postmigration. Leveraging AMS to prepare for the migration and to take over operations saved hundreds of hours of expensive resource time.

› **Accelerated cloud migration cost savings of $2.3 million.** Many interviewees needed to ensure that their cloud environments would be compliant with regulations (such as HIPAA, GDPR, ISO, or PCI) before they could start migrating applications and infrastructure. AMS ensured compliance with the proper regulations as part of configuring the AWS landing zone. For the composite organization, exiting its existing data center resulted in a monthly cost savings of $250,000. Because the organization completed the migration a year faster with AMS than it would have with an in-house team, it gained 12 months of savings.

› **Optimized resource efficiency gains of $872.5K.** AMS brought in operational excellence, experience, expertise, and best practices that allowed the composite company to achieve higher resource efficiency gains than what it would have achieved on its own. The company got more value out of every man-hour spent.

› **Avoided management infrastructure spending resulted in $2.9 million in cost savings.** Creating or buying its own infrastructure management tools such as patch, update, or backup solutions would have led to increased infrastructure costs. AMS provided all necessary management tools. Working with AMS enabled the organizations to avoid fees they would have paid if they led cloud operations on their own.

› **Reduced chance of a major security breach by $1 million.** Working with AMS delivered a major uplift to the organizations' overall security posture and reduced the chance of a major security breach, which can cause damage in the form of brand reputation, stock price, and cost of remediation efforts.

› **Gained incremental revenue of $2.5 million as a result of increased uptime.** With AMS running cloud operations, the organizations saw higher uptime for their eCommerce channels due to improved patching compliance, reduced number of major security incidents, and faster incident response. Higher uptime resulted in incremental revenue that the organizations would not have recognized if they ran cloud operations on their own.

Unquantified benefits. The interviewed organizations and composite organization experienced the following benefits, which are not quantified in this study:

› **Enabling innovation**. Since AMS handled migration planning, execution, and ongoing operations, the companies' internal engineering resources were able to stay focused on their core business functions and technology projects, driving business innovation without disruption.

› **Guaranteed adherence to migration best practices.** AMS enforced consistency and standardization throughout the migration process and beyond, which ensured that the organizations followed AWS best practices and enabled a fast project timeline. This was a top priority for the composite organization.
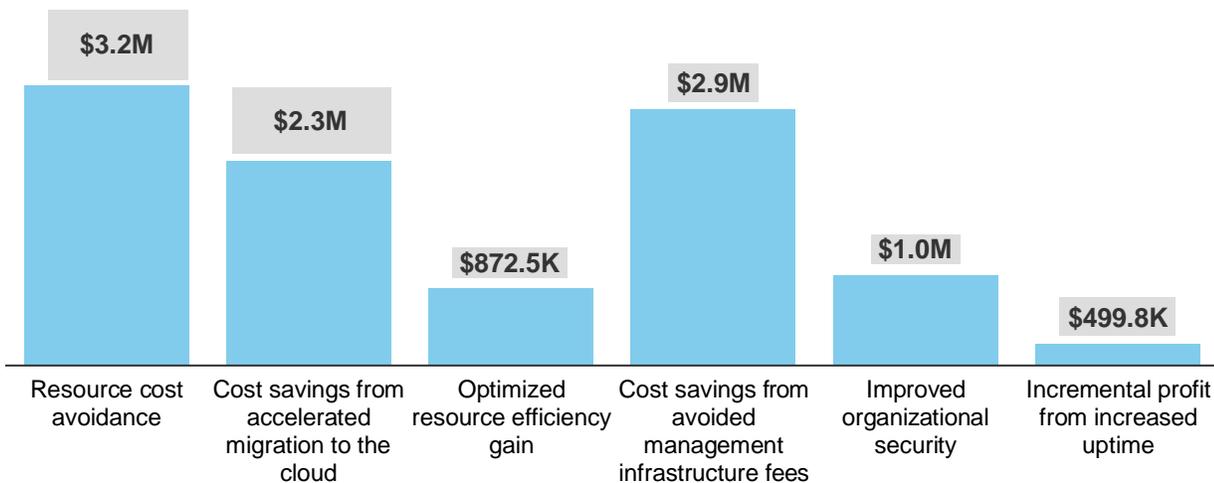
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› **Infrastructure cost optimization.** AMS advised the organizations on ways to optimize infrastructure and reduce costs during and after migration. AMS drew on its expertise and experience, encouraging the organizations to reconsider its choices of processes and tools to drive efficiencies.

› **Peace of mind.** The organizations received knowledgeable, consistent, and proactive support and guidance from AMS teams and relied on them to meet key migration milestone dates and run cloud operations smoothly and independently.

Costs. The interviewed organizations experienced the following risk-adjusted PV costs:

› **AMS fees of $3.2 million over the course of three years.** AMS pricing is calculated as a percentage (typically 25%) of a customer's total AWS usage fee and will vary based on the types of services managed, and response and restoration time commitment levels selected per an AWS account. Forrester built this financial model based on an infrastructure of 5,000 migrated and managed servers.

Forrester's interviews with six existing customers and subsequent financial analysis found that the composite experienced benefits of $10.8 million over three years versus costs of $3.2 million, totaling a net present value (NPV) of $7.7 million and an ROI of 243%.

Benefits (Three-Year)
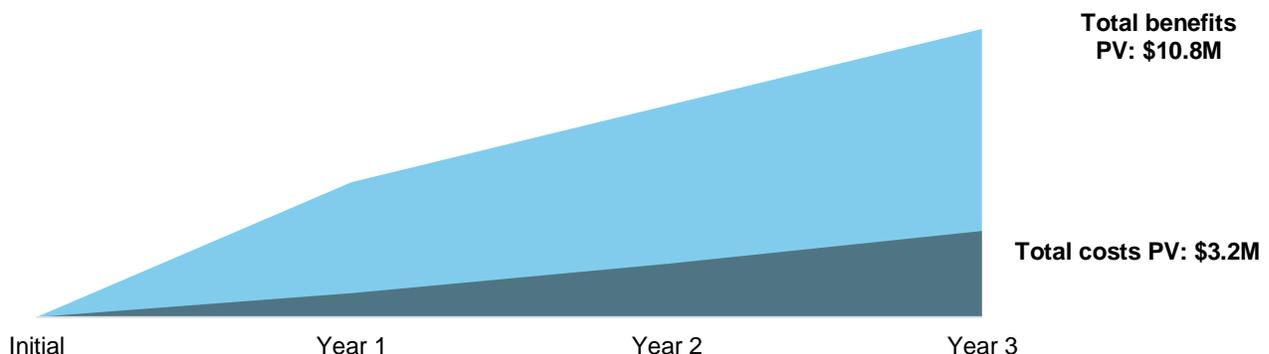
Resource cost avoidance	$3.2M
Cost savings from accelerated migration to the cloud	$2.3M
Optimized resource efficiency gain	$872.5K
Cost savings from avoided management infrastructure fees	$2.9M
Improved organizational security	$1.0M
Incremental profit from increased uptime	$499.8K

Financial Summary

Total benefits PV: $10.8M

Total costs PV: $3.2M

Initial   Year 1   Year 2   Year 3

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TEI Framework And Methodology

From the information provided in the interviews, Forrester has constructed a Total Economic Impact™ (TEI) framework for those organizations considering implementing AMS.

The objective of the framework is to identify the cost, benefit, flexibility, and risk factors that affect the investment decision. Forrester took a multistep approach to evaluate the impact that AMS can have on an organization:

The TEI methodology helps companies demonstrate, justify, and realize the tangible value of IT initiatives to both senior management and other key business stakeholders.

DUE DILIGENCE
Interviewed AWS stakeholders and Forrester analysts to gather data relative to AWS Managed Services.

CUSTOMER INTERVIEWS
Interviewed six organizations using AWS Managed Services to obtain data with respect to costs, benefits, and risks.

COMPOSITE ORGANIZATION
Designed a composite organization based on characteristics of the interviewed organizations.

FINANCIAL MODEL FRAMEWORK
Constructed a financial model representative of the interviews using the TEI methodology and risk-adjusted the financial model based on issues and concerns of the interviewed organizations.

CASE STUDY
Employed four fundamental elements of TEI in modeling AMS' impact: benefits, costs, flexibility, and risks. Given the increasing sophistication that enterprises have regarding ROI analyses related to IT investments, Forrester's TEI methodology serves to provide a complete picture of the total economic impact of purchase decisions. Please see Appendix A for additional information on the TEI methodology.

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The AMS Customer Journey

BEFORE AND AFTER THE AMS INVESTMENT

Interviewed Organizations

For this study, Forrester conducted six interviews with AMS customers. Interviewed customers include the following:

INDUSTRY	REGION	INTERVIEWEE	PROJECT OVERVIEW
Software	Global	Senior VP of worldwide customer service organization	Cloud migration and operation support for customers
Energy	Australia	Head of cloud and infrastructure business office	Data center exit, application migration to the cloud; 1,000+ applications
Manufacturing	Global	Principle architect — enterprise cloud solutions leader IT director of operations	Data center exit, application migration to the cloud; 50+ applications
Media	Global	Head of solutions architecture infrastructure, hosting and networks cloud and data center	Data center exit, application migration; 300 applications, 10,000+ servers
Financial services	North America	VP of infrastructure and operations	Data center exit, server migration to the cloud with operation support; 1,500+ workloads
Financial services	Australia	Executive general manager for infrastructure cloud workplace	Digital transformation, 2,000+ applications

Composite Organization

Based on the interviews, Forrester constructed a TEI framework, a composite company, and an associated ROI analysis that illustrate the areas financially affected. The composite organization is representative of the six companies that Forrester interviewed and is used to present the aggregate financial analysis in the next section. The composite organization that Forrester synthesized from the customer interviews has the following characteristics:

Description of composite. The global, $1 billion B2C organization employs 10,000 people and serves six million customers. Over the past few decades, the composite organization invested in significant growth and developed a variety of applications to support business needs and customers. The organization recognized the need for digital transformation and looked to migrate its legacy applications to the cloud while closing its corresponding data centers.

Deployment characteristics. After extensive research and analysis, the organization chose to move forward with AWS as its cloud provider. The company lacked employees who were knowledgeable about cloud migration and operations and, therefore, looked for support on its journey to digital transformation.

Key assumptions:
- Global company
- $1 billion in annual revenue
- 10,000 employees
- 5,000 servers need migration

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Key Challenges

Prior to its decision to migrate its data center and its subsequent decision to select AMS as the partner to prepare the migration and manage the environment in the cloud, the organization experienced:

› **Lack of trained resources to manage migration and the new cloud infrastructure operations.** For many years, the organization's infrastructure team focused on running data centers and did not have the expertise needed to drive the new business initiative of migrating to the cloud or operating cloud infrastructure.

› **Aggressive migration timeline.** The organization had a hard deadline for its data center exit. If it missed the deadline, it would have incurred a year's worth of data center management fees and slowed the business transformation that was very important to the executive team.

› **Pressure to select the right partner.** The organization already felt that it was making a big decision by moving to the cloud. Finding the right partner to help with the migration and operations added more stress to the IT and infrastructure teams. As a part of its search, the composite company identified several managed services providers, but each had experience with only certain phases of cloud migration or had little expertise working at a global scale.

Solution Requirements

The organization searched for a partner that would bring knowledge and expertise not only to start and complete the migration, but more importantly, to run the operations beyond migration. In addition, it expected its partner to complete the migration:

› With greater efficiency, ideally requiring less time and fewer internal resources than the company had or could train.

› With less risk, minimizing the impact to the business and infrastructure teams.

After an extensive RFP and business case process evaluating multiple vendors, the organization chose AMS based on its expertise and firsthand knowledge of the AWS public cloud platform.

Project Overview

Project characteristics. To meet its goals of digital transformation, the composite organization embarked on a complex application migration project. It expected to exit the data center and set up efficient cloud operations postmigration by adding automation and management tools. The composite organization had to build landing zones (to migrate into); ensure strong governance, security and compliance guardrails; manage the actual migration process; and establish proper operating practices postmigration — which includes monitoring, alerting, and incident response. AMS led the project from roadmap development through discovery and planning to execution and ongoing operations.

Alternative scenario. To calculate the benefits of working with AMS, the analysis required an alternative scenario. What would the composite organization have experienced with its data center exit project if it had not worked with AWS Managed Services? Based on conversations with interviewees, Forrester hypothesized that the alternative scenario would

> "We looked at several managed service providers, but we had to ask ourselves, 'In what scope do you bring them in? Do you bring them in to run, to build the cloud infrastructure landing zone? Do you bring them in for the migration? Do you bring them in for cloud operations?' AMS offered all three of those."
>
> *IT director of operations, manufacturing*

> "Our primary driver was the velocity of migrations that AMS could support by essentially providing us with a separate infrastructure team so we did not need to divert our already-stretched internal resources."
>
> *Head of cloud and infrastructure business office, energy*

> "I think we could have migrated on our own. But would we have met our dates? Absolutely not. I think it would have been a brute force project where we were just trying to figure out things on our own, and that what would have caused a lot of challenges."
>
> *VP of infrastructure and operations, financial services*

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have been a project led by internal resources. In this scenario, the project:

› **Took more time to complete.** Without AWS Managed Services' unique expertise, the composite organization would have taken at least 12 months longer to prepare and execute the migration out of its data center.

› **Delivered suboptimal outcomes.** AWS Managed Services' expertise in the underlying technologies maximized efficiency and operational cost savings. If the organization had completed the project in-house without access to these best practices, it would have achieved efficiency gains and operational cost savings, but not at the same level.

› **Was riskier.** Without AWS Managed Services' rigorous planning process, executing the migration would have been accompanied by a higher risk of unplanned downtime.

Key Results

The interviews revealed that key results from the AMS investment include:

› **Fully optimized cloud operations.** The AMS team set up cloud operations to follow AWS best practices. The composite organization benefited from the technical and process expertise of AMS, which resulted in the creation of cloud infrastructure optimized for efficiency and ready to support growth.

› **Stronger security posture.** Working with AMS delivered a major uplift to the organizations' security and reduced the chance of a major security breach through optimal landing zone configuration, compliance, governance structures, built-in automation, new specialized tools, and 24/7 monitoring and response.

› **Faster time-to-operation.** AMS enabled the composite organization to complete the migration in time to meet its deadline. Without AMS' expertise, proprietary tools and best practices, it would have taken the organization much longer to complete. Getting to the operational stage in less time eliminated the data center costs and allowed the organization to take advantage of the cloud, improve security, and realize its efficiency and operational cost savings sooner.

› **Enabling of business transformation.** As organizations strive to enhance their respective businesses through digital transformation, they depend in their success on seamless infrastructure provisioning, configuration, change and compliance management. AWS Managed Services took over the infrastructure operations as a reliable and proactive partner, which allowed these companies to keep their engineering talent focused on their core work to drive innovation.

"It goes without saying that AMS is the best in the business because they actually are part of AWS and draw from its experience. You're dealing with one provider and can move forward very quickly. I think that was very helpful."

Principle architect — enterprise cloud solutions leader, manufacturing

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Analysis Of Benefits

QUANTIFIED BENEFIT DATA AS APPLIED TO THE COMPOSITE

Total Benefits

| REF.	BENEFIT	YEAR 1	YEAR 2	YEAR 3	TOTAL	PRESENT VALUE
Atr	Resource cost avoidance	$1,280,000	$1,280,000	$1,280,000	$3,840,000	$3,183,171
Btr	Cost savings from accelerated migration to the cloud	$2,550,000	$0	$0	$2,550,000	$2,318,182
Ctr	Optimized resource efficiency gain	$280,500	$364,650	$420,750	$1,065,900	$872,479
Dtr	Cost savings from avoided management infrastructure fees	$892,500	$1,190,000	$1,487,500	$3,570,000	$2,912,415
Etr	Improved organizational security	$333,396	$417,767	$504,753	$1,255,917	$1,027,578
Ftr	Incremental profit from increased uptime	$197,260	$201,205	$205,230	$603,695	$499,805
	Total benefits (risk-adjusted)	$5,533,656	$3,453,623	$3,898,233	$12,885,512	$10,813,630

Resource Cost Avoidance

The alternative to using AMS to lead the migration effort was to run the project in-house, which would have required hiring additional cloud experts or bringing in skilled contractors. By using AMS, the composite organization avoided the cost of hiring and compensating these additional resources.

Interviewees consistently stated that it would have taken them significantly longer to complete their data center exit projects if they had completed migration on their own.

› A software company expected to invest up to $1.5 million in talent if it was to perform the migration and operations on its own. And it estimated that the hiring and onboarding process would've taken 100 to 150 business days before they could've started.

› An executive general manager for infrastructure at a financial organization explained that hiring talent, preparing the landing zone, and ensuring compliance and governance guardrails would've been a multimillion-dollar people investment.

› An energy company relied on AMS throughout the project and avoided expanding the staff or retraining and reassigning existing engineering resources. The head of cloud and infrastructure said: "We didn't have to increase our FTE count for our central and operations teams as we would have otherwise without AMS. The 24/7 operations capability was there for us, which we didn't have internally."

> The table above shows the total of all benefits across the areas listed below, as well as present values (PVs) discounted at 10%. Over three years, the composite organization expects risk-adjusted total benefits to be a PV of nearly $9.5 million.

$3.2 million

three-year benefit PV
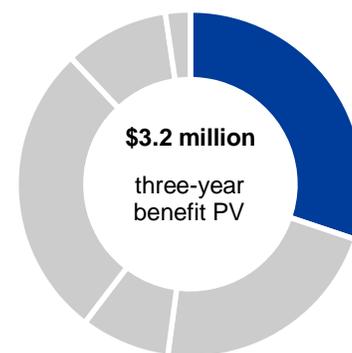
Cost savings from resource cost avoidance: 29% of total benefits

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The model quantifies the incremental resource time the composite organization would have incurred if it had led the effort on its own. Two factors drive this cost: the need to fill the gap in cloud migration and management expertise and the need to operate the cloud postmigration. For the composite organization, Forrester assumes that:

› It would have had to hire or reassign 10 FTEs and continue to employ them. Some would contribute foundation, migration, and modernization expertise, while others would assume day-to-day operations. Over the course of the project, these FTEs or contractors could vary as the requirements changed, but Forrester assumes the sum of all resources is 10 FTEs.

› The average cost to hire a full-time resource is $160,000 per year.

An organization's ability to achieve these outcomes will vary based on several factors:

› Existing resource knowledge and experience. Given that cloud migrations and operations are complex and infrequent events, the model assumes that the composite organization lacks the in-house expertise and would have to acquire it.

› Existing volume and complexity of the infrastructure.

› Average cost to hire a resource.

To account for these risks, Forrester adjusted this benefit downward by 20%, yielding a three-year risk-adjusted total PV of $3.2 million.

The composite organization would have required the equivalent of 10 full-time cloud engineers for three years if it had conducted the migration on its own.

Impact risk is the risk that the business or technology needs of the organization may not be met by the investment, resulting in lower overall total benefits. The greater the uncertainty, the wider the potential range of outcomes for benefit estimates.

Resource Cost Avoidance: Calculation Table					
REF.	METRIC	CALCULATION	YEAR 1	YEAR 2	YEAR 3
A1	Number of cloud resources required		10	10	10
A2	Average cost per resource		$160,000	$160,000	$160,000
At	Resource cost avoidance	A1*A2	$1,600,000	$1,600,000	$1,600,000
	Risk adjustment	↓20%			
Atr	Resource cost avoidance (risk-adjusted)		$1,280,000	$1,280,000	$1,280,000

Cost Savings From Accelerated Migration To The Cloud

Along with the desire to modernize applications and provide better business outcomes, most interviewees wanted to exit their data centers to reduce monthly expenses. Interviewees reported expensive hosted data center fees, underutilized technology, and high costs for power and cooling. The sooner they completed their migrations, the sooner they could eliminate the costs of operating their own data centers.

› Many interviewees needed to ensure that their cloud environments would be compliant with regulations (such as HIPAA, GDPR, ISO, or PCI) before they could start migrating applications and infrastructure. AMS ensured compliance with the proper regulations as part of configuring the AWS landing zone. As the executive general manager for infrastructure cloud workplace at a financial company told Forrester: "With AMS, we were able to just hand over the compliance certificates, which made this part very fast. If we had to do it on our own, that would have been a significant piece of work".

$2.3 million

three-year benefit PV
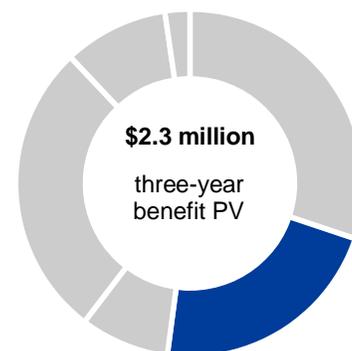
Cost savings from accelerated migration to the cloud: 21% of total benefits

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› A North American financial services organization faced a hard deadline to exit the data center. If it missed the deadline, a third-party provider would have charged a $5 million data center management fee. According to the VP of infrastructure and operations: "If we did not hit our deadline, that would have triggered us to have to extend our data center contract by at least another year. That would have delayed a lot of our plans. Getting to the cloud a year sooner meant we could start delivering more value to the business faster."

› Another financial services organization told Forrester that its average data center costs per application post migration were reduced by 90%, and AMS allowed it to recognize these savings sooner. The executive general manager for infrastructure cloud workplace said: "I think you could replicate the AMS environment, but you'd have to go and build all those landing zones and build all those tools and events. For us, that would've taken a year. And in that year, we wouldn't be able to migrate a single application."

For the composite organization, Forrester assumes that:

› Its data centers that hosted the migrated applications costs $250,000 to operate each month.

› When it partnered with AMS, the organization realized these costs savings one year sooner than it would have if it led its own migration project.

The reduction in data center operating expenses will vary with:

› Existing data center expenses.

› The organization's effort and velocity of migration without AMS.

To account for these risks, Forrester adjusted this benefit downward by 15%, yielding a three-year risk-adjusted total PV of $2.3 million.

AMS enabled the organization to meet its aggressive timeline to exit the data center.

"The velocity of migrations that we needed was not going to happen without AMS. With our data center exit, we were able to mark those servers as decommissioned much sooner: within a month or two, instead of six months to a year and a half."

Head of solutions architecture infrastructure, media

Cost Savings From Accelerated Migration To The Cloud: Calculation Table					
REF.	METRIC	CALCULATION	YEAR 1	YEAR 2	YEAR 3
B1	Data center cost per month		$250,000		
B2	Months of savings gained due to faster completion		12		
Bt	Cost savings from accelerated migration to the cloud	B1*B2	$3,000,000	$0	$0
	Risk adjustment	↓15%			
Btr	Cost savings from accelerated migration to the cloud (risk-adjusted)		$2,550,000	$0	$0

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Optimized Resource Efficiency Gain

Another cloud migration goal of the interviewees was to reduce IT operations costs, including monitoring, patching, backup, security, and incident management. While interviewees believed they would have acquired some efficiencies in a self-led project, they are confident that AMS' experience and expertise led to higher efficiency gains than what they would have achieved on their own.

› All interviewees noted that AMS stayed on top of important alerts and tickets and successfully performed all security and performance monitoring. "AMS is really proactive, which was a breath of fresh air," said IT director of operations at a manufacturing company.

› Without AMS, an energy company would have expanded their operational support team by at least three to three and a half FTEs to manage cloud operations.

› A financial services company attempted to manage a handful of applications without AMS involvement. According to the executive general manager for infrastructure, it was using costly developer resources to get up in the middle of the night do patching and backups. The interviewee said: "These developers spent a lot of time on these very basic functions because they did not have the automation. The cost of operating those environments was going through the roof and this model was not sustainable."

› Interviewees at a manufacturing company estimated 30% savings in operating costs due to the automation set up by the AMS team.

For the composite organization, Forrester assumes that:

› It experienced a 30% resource efficiency gain.

› This resource efficiency gain was recognized across the organization's operations team. In the first year, 10 FTEs were dedicated to operations, 13 in Year 2, and 15 in Year 3.

› It paid an average fully loaded salary of $110,000 to operations FTEs.

Efficiency gains would differ based on:

› Degree of existing inefficiencies.

› Willingness to adopt the new technology and operating models.

› Average fully loaded salaries.

To account for these risks, Forrester adjusted this benefit downward by 15%, yielding a three-year risk-adjusted total PV of $872,479.

$872,479

three-year benefit PV
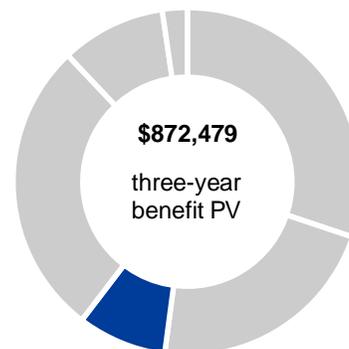
Optimized resource efficiency gain: 8% of total benefits

The expertise, experience, and proprietary tools saved hours of operations' time managing the cloud infrastructure.

Optimized Resource Efficiency Gain: Calculation Table					
REF.	METRIC	CALCULATION	YEAR 1	YEAR 2	YEAR 3
C1	Number of operations FTEs affected		10	13	15
C2	Efficiency gain with AMS		30%	30%	30%
C3	Average burdened salary		$110,000	$110,000	$110,000
Ct	Optimized resource efficiency gain	C2*C1*C3	$330,000	$429,000	$495,000
	Risk adjustment	↓15%			
Ctr	Optimized resource efficiency gain (risk-adjusted)		$280,500	$364,650	$420,750

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Cost Savings From Avoided Management Infrastructure Fees

All interviewed companies relied on AMS to provide infrastructure management tools that perform auxiliary functions such as monitoring, patch management, and backup. The executive general manager for infrastructure cloud workplace at a financial services company said: "If I had to go and build a patch management solution, that would require some infrastructure. If I had to build an automated backup solution, that would require a lot of infrastructure." Since organizations pay AWS for infrastructure usage, companies would incur AWS fees for additional infrastructure use. Working with AMS enabled the organizations to avoid fees they would have paid if they led cloud operations on their own.

For the composite organization, Forrester assumes that:

› The organization pays the fee of $3,500 per server running on AWS. In the first year, the organization migrated 3,000 servers, followed by an additional 1,000 servers in Years 2 and 3.

› Without AMS, the organization would need to dedicate additional infrastructure for infrastructure management tools such as monitoring, patch management, or backup solutions. The size of the additional infrastructure would amount to 10% of the current infrastructure in use.

Cost savings from avoided management infrastructure fees will vary based on:

› Current size of the infrastructure running on AWS and the price per server.

› The type of management tools the organizations builds for cloud operations and the infrastructure needed to host them.

To account for these risks, Forrester adjusted this benefit downward by 15%, yielding a three-year risk-adjusted total PV of $3.7 million.

$2.9 million

three-year benefit PV
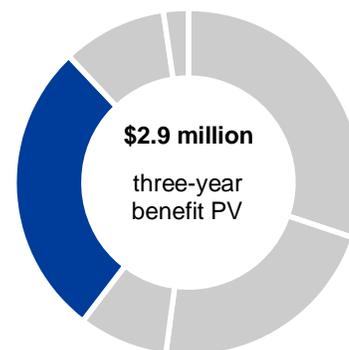
Cost savings from avoided management infrastructure fees: 27% of total benefits

Cost Savings From Avoided Management Infrastructure Fees: Calculation Table					
REF.	METRIC	CALCULATION	YEAR 1	YEAR 2	YEAR 3
D1	Number of servers		3,000	4,000	5,000
D2	Additional management infrastructure avoided due to AMS		10%	10%	10%
D3	Cost per server post migration	Cloud usage costs / D1	$3,500	$3,500	$3,500
Dt	Cost savings from avoided management infrastructure fees	D1*D2*D3	$1,050,000	$1,400,000	$1,750,000
	Risk adjustment	↓15%			
Dtr	Cost savings from avoided management infrastructure fees (risk-adjusted)		$892,500	$1,190,000	$1,487,500

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Improved Organizational Security

In their legacy environments, interviewed organizations frequently struggled to ensure 100% patching, backups, 24/7 monitoring, and response to alerts, and they did not have the visibility and resources to run audits or perform a deep dive analysis on user access. Interviewees acknowledged that working with AMS lowered their security risks through optimal landing zone configuration, compliance, governance structures, built-in automation, new specialized tools, and 24/7 monitoring and response. The principle architect at a manufacturing company said: "When the CIO asked, 'Are we going to be secure?' and, 'What applications can we put out there in the cloud?,' it provided a huge sense of comfort to show that we had all the right controls in place and that AMS will support us."

› A manufacturing company's IT director of operations said: "With the different technologies available to us with AMS, we're doing user audits and intrusion detection we could not do before. And the security tools cover 100% of everything that's running in our environment."

› For a financial company, the biggest improvement came in AMS performing monitoring and response. The executive general manager for infrastructure cloud workplace said: "The environment is monitored by AMS. If anything happens, they will start a case and, in our ticketing system, we will see that they've got it, that they're working on it, and all of the case notes as they're working on it. We're continually kept up to date. It's tens of issues per month, and it's significant that we don't have to do that 24/7 monitoring of the environment."

For the composite organization, Forrester assumes:

› The average cost of a security breach is $3.92 million per the 2019 Ponemon Institute survey.[4] The risk of a breach is 15% and increases by 3.5% each year.

› The average cost of a data breach increases at 1.6% per year.

› AMS provides the organization with the framework, tools, support, and automation to reduce security risks. The use of security automation reduces the cost of a breach by 32%, according to Ponemon. Reliance on an incident response team that follows an incident response plan further decreases the cost of a breach by 31%.

Savings from improved organizational security will vary based on:

› The organization's historic outcomes for patching, backup, and incident response.

› The skill and capacity of an organization's IT and/or security operations team(s).

To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year risk-adjusted total PV of $1 million.

$1.0 million

three-year benefit PV
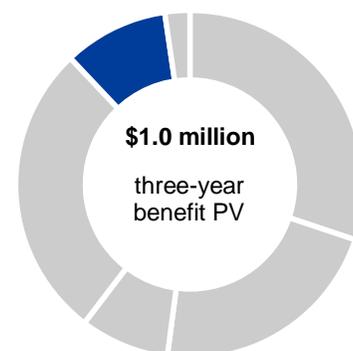
Improved organizational security: 10% of total benefits

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Improved Organizational Security: Calculation Table

REF.	METRIC	CALCULATION	YEAR 1	YEAR 2	YEAR 3
E1	Average cost of a data breach	Increases by 1.6% YoY	$3,920,000	$3,982,720	$4,046,444
E2	Decrease in cost of breach with security automation		32%	32%	32%
E3	Decrease in cost of a breach with incident response team that follows an incident response plan		31%	31%	31%
E4	Risk of experiencing a breach	Increases by 3.5 percentage points YoY	15.0%	18.5%	22.0%
Et	Improved organizational security	(E1*E2+E1*E3)*E4	$370,440	$464,186	$560,837
	Risk adjustment	↓10%			
Etr	Improved organizational security (risk-adjusted)		$333,396	$417,767	$504,753

Incremental Profit From Increased Uptime

With AMS running cloud operations, the organizations saw higher uptime for their eCommerce channels due to improved patching rates, reduced number of major security incidents, and faster incident response.

› A financial services company saw 50% reduction in major security incidents, which resulted in fewer disruptions to the business and higher uptime.

› Several interviewees reported that their successful patch rates significantly improved with AMS, which meant they no longer needed to schedule additional downtime to run the additional patching.

For the composite organization, Forrester assumes:

› 40% of the organization's revenue is generated through eCommerce.

› Working with AMS enabled the organization to gain 2 hours of incremental uptime per month.

› The organization's average revenue per hour is $45,662.

› The organization's operating margin is 20%.

Incremental profit from increased uptime will vary based on:

› The organization's historic outcomes for patching, backup, and incident response.

› The portion of the organization's revenue attributed to eCommerce.

› The organization's annual revenue and profit margin.

To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year risk-adjusted total PV of $499,805.

$499,805

three-year benefit PV
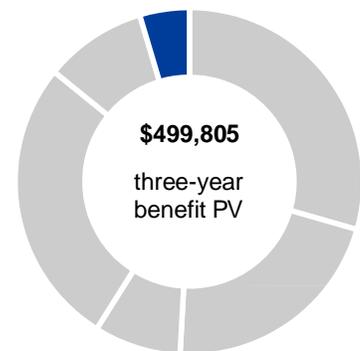
Incremental profit from increased uptime: 5% of total benefits

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Incremental Profit From Increased Uptime: Calculation Table					
REF.	METRIC	CALCULATION	YEAR 1	YEAR 2	YEAR 3
F1	Annual revenue	2% increase YoY	$1,000,000,000	$1,020,000,000	$1,040,400,000
F2	Percent of organization's revenue attributed to e-commerce		40%	40%	40%
F3	Incremental monthly uptime from improved performance with AMS (hours)		2	2	2
F4	Number of months experienced		12	12	12
F5	Average revenue per hour (rounded value shown)	F1*F2/ 8,760 hours	$45,662	$46,575	$47,507
F6	Operating margin		20%	20%	20%
Ft	Incremental profit from increased uptime	F3*F4*F5*F6	$219,178	$223,562	$228,033
	Risk adjustment	↓10%			
Ftr	Incremental profit from increased uptime (risk-adjusted)		$197,260	$201,205	$205,230

Unquantified Benefits

The companies that Forrester interviewed shared the following benefits that affected their organizations but are not quantified in this study:

› **Enabling of innovation.** For all interviewees, relying on AMS meant they did not need to pull their engineering talent from their core work to handle the migration, and that ensured no interruption to innovation. The VP of infrastructure and operations at a financial services company said: "I don't need my engineers to be experts on migrations because, hopefully, this is the last time we have to do this."

› **Guaranteed adherence to best practices.** AMS enforced consistency and standardization throughout the migration process, starting from the landing zone. Interviewees found this predictability useful. It allowed for the short timelines (e.g., moving 30 to 50 applications in 50 days), and also guaranteed they were not making mistakes. The executive general manager for infrastructure cloud workplace at a financial organization said: "By adopting the AMS landing zone, we knew that it was obviously the AWS best practice, it would provide a very consistent environment, and it was already tested and verified."

› **Infrastructure cost optimization.** AMS advised interviewees on ways to optimize infrastructure and reduce costs. It drew on its expertise and experience, encouraging interviewees to reconsider their processes and applications to drive efficiencies in their current infrastructure. The IT director of operations at a manufacturing company said: "We had those nonproduction workloads that were running all the time. We set them and forget them. We don't have to run those nonproduction instances unless there's an application upgrade or there's an incident or otherwise. Now that AMS identified them, we can rightsize those nonproduction systems and reduce costs."

Adherence to best practices and guardrails provided by AMS enabled the composite organization to keep the desired migration velocity.

"When we completed the migration, our executives were astonished that we hit our timeline and got this accomplished with very little impact to production. I don't think we could have done that without AMS. I don't see that talent there anywhere else at this point."

VP of infrastructure and operations, financial services

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› **Peace of mind.** The interviewees continuously cited the sense of comfort and partnership that AMS delivered to them. Interviewees felt that they received reliable and timely support and guidance and proactive recommendations. Companies found AMS receptive to new capabilities or features requests whenever a new challenge or need came up. The VP of infrastructure and operations at a financial services company said: "During the migration, we truly felt like the AMS team was here to partner with us. They were here as part of our team. The only way people could tell that someone was an AMS resource, was because their badges were a different color than our employees'."

Flexibility

The value of flexibility is clearly unique to each customer, and the measure of its value varies from organization to organization. There are multiple scenarios in which a customer might choose to implement AMS and later realize additional uses and business opportunities, including:

› **Access to innovation.** Working with AMS guarantees preview and immediate access to new capabilities available through AWS as companies look to simplify their environments, optimize cost, strengthen security, and more.

› **Shared expertise and best practices.** Stakeholders worked side-by-side with AMS resources throughout the migration and beyond, learning why the resources made certain decisions and observing how they operate the environment postmigration. This knowledge stayed within the organization and could be leveraged in the future.

Flexibility would also be quantified when evaluated as part of a specific project (described in more detail in Appendix A).

> "One of their big things that AWS Managed Services did to make us successful was they partnered with us very closely when we ran into problems. They showed partnership. They showed up."
>
> *Head of solutions architecture infrastructure, media*

Flexibility, as defined by TEI, represents an investment in additional capacity or capability that could be turned into business benefit for a future additional investment. This provides an organization with the "right" or the ability to engage in future initiatives but not the obligation to do so.

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Analysis Of Costs

QUANTIFIED COST DATA AS APPLIED TO THE COMPOSITE

Total Costs							
REF.	COST	INITIAL	YEAR 1	YEAR 2	YEAR 3	TOTAL	PRESENT VALUE
Ftr	Fees to AMS	$0	$965,000	$1,300,000	$1,600,000	$3,865,000	$3,153,757
	Total costs (risk-adjusted)	$0	$965,000	$1,300,000	$1,600,000	$3,865,000	$3,153,757

Fees To AMS

Fees to AMS are calculated as a percentage of AWS usage within the accounts that are managed by AMS and will vary based on the types of services managed, and response and restoration time commitment levels selected per an AWS account. The majority of AMS customers are charged a fee that equals 25% of their AWS usage fees. For this analysis, Forrester assumes the composite organization:

› Migrated 5,000 servers (3,000 in Year 1 and an additional 1,000 in Years 2 and 3).

› Leaned on AMS for full project support from planning to operations.

› Paid AMS $965,000 in Year 1, $1.3 million in Year 2, and $1.6 million in Year 3.

An organization's fees will vary based on:

› The size and complexity of the infrastructure that needs to be migrated to AWS.

› The number of critical applications and the need for particular response times.

› The in-house resources and expertise that the organization can dedicate to the project.

AWS provided accurate estimates for AMS fees, so Forrester did not adjust these fees for risk.

> The table above shows the total of all costs across the areas listed below, as well as present values (PVs) discounted at 10%. Over three years, the composite organization expects risk-adjusted total costs to be a PV of nearly $3.2 million.

Other Cost Considerations

Cloud migrations are expensive events that include several other significant costs in additional to outsourcing fees to a partner, such as:

› Internal resources assigned to project and vendor management.

› Additional professional services resources.

› Training.

› Travel.

This model assumes that the organization would have incurred each of these costs — in the same amount — whether it conducted its migration on its own or with the support of AWS Managed Services. Since the costs are equal in both scenarios, they're excluded from the analysis. Readers are encouraged to assess the full cost of their cloud migration.

> Implementation risk is the risk that a proposed investment may deviate from the original or expected requirements, resulting in higher costs than anticipated. The greater the uncertainty, the wider the potential range of outcomes for cost estimates.

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Financial Summary

CONSOLIDATED THREE-YEAR RISK-ADJUSTED METRICS

Cash Flow Chart (Risk-Adjusted)
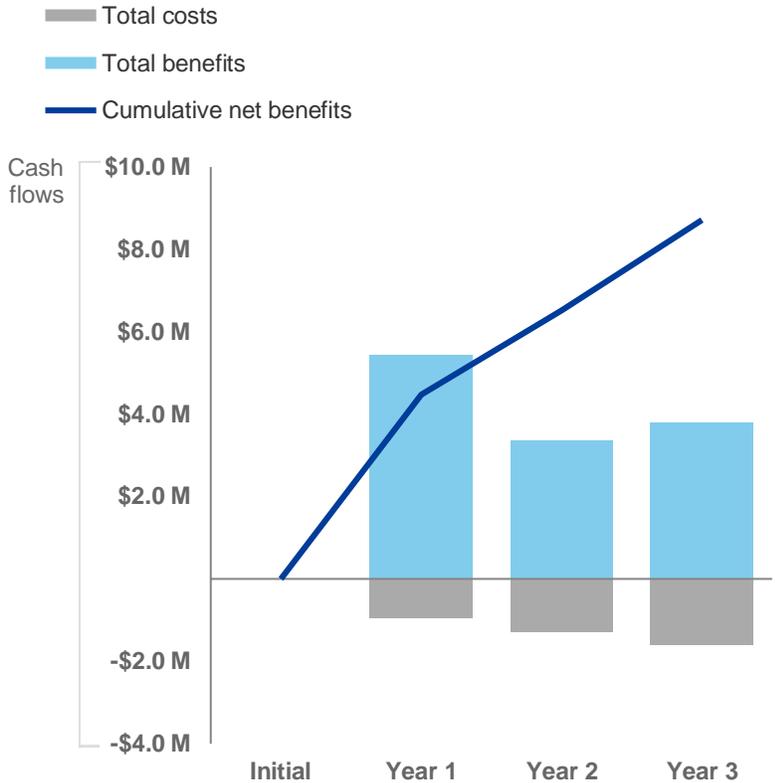
The financial results calculated in the Benefits and Costs sections can be used to determine the ROI, NPV, and payback period for the composite organization's investment. Forrester assumes a yearly discount rate of 10% for this analysis.

Legend:
- Total costs
- Total benefits
- Cumulative net benefits

These risk-adjusted ROI, NPV, and payback period values are determined by applying risk-adjustment factors to the unadjusted results in each Benefit and Cost section.

Cash Flow Analysis (risk-adjusted estimates)						
	INITIAL	YEAR 1	YEAR 2	YEAR 3	TOTAL	PRESENT VALUE
Total costs	$0	($965,000)	($1,300,000)	($1,600,000)	($3,865,000)	($3,153,757)
Total benefits	$0	$5,533,656	$3,453,623	$3,898,233	$12,885,512	$10,813,630
Net benefits	$0	$4,568,656	$2,153,623	$2,298,233	$9,020,512	$7,659,873
ROI						243%

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AWS Managed Services: Overview

The following information is provided by AWS. Forrester has not validated any claims and does not endorse AWS or its offerings.

AWS Managed Services (AMS) operates AWS on your behalf, providing a secure and compliant AWS Landing Zone, a proven enterprise operating model, ongoing cost optimization, and day-to-day infrastructure management. By implementing best practices to maintain your infrastructure, AWS Managed Services helps to reduce your operational overhead and risk.

How AWS Managed Services Works
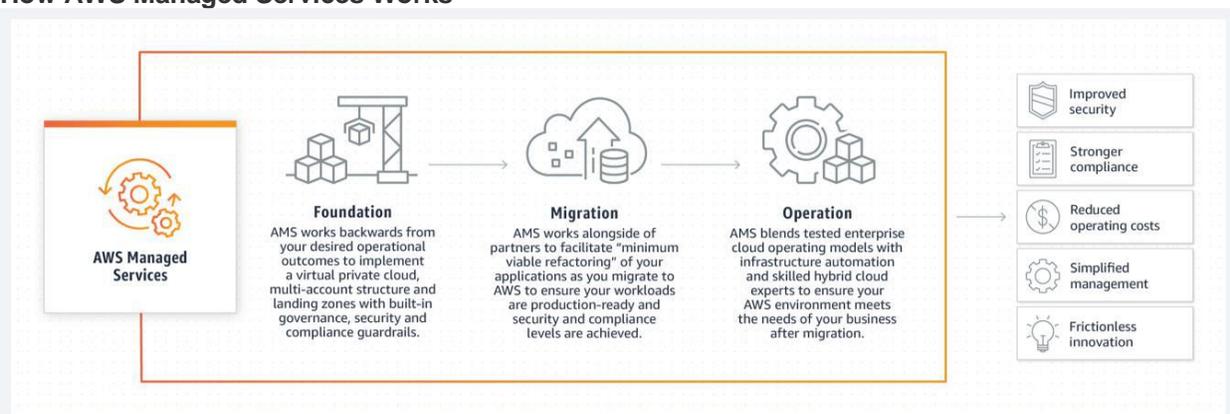
AWS Managed Services automates common activities such as change requests, monitoring, patch management, security, and backup services, and it provides full-lifecycle services to provision, run, and support your infrastructure. We augment existing cloud skills and provide you with expertise to get a production-grade environment operational. AWS Managed Services unburdens you from infrastructure operations so you can direct resources toward modernization of applications and differentiating your business.

AWS Managed Services improves your security and enables your compliance by offering a step-by-step process for extending your security and identity perimeter in the cloud, while providing features that help you meet various compliance program requirements (HIPAA, HITRUST, GDPR, SOC, NIST, ISO, PCI, FedRAMP). This process includes the critical tasks of Active Directory Integration, security onboarding, and customer control mapping. Our rigor and controls help to enforce your corporate and security infrastructure policies, and they enable you to develop solutions and applications using your preferred development approach.

AWS Managed Services provides an enterprise-ready and proven operating environment, enabling you to migrate production workloads in days versus months. Working with partners and AWS Professional Services, AWS Managed Services leverages the minimum viable refactoring approach of making only necessary modifications to your applications to meet security and compliance requirements. AWS Managed Services then takes responsibility for operating your cloud environment postmigration, such as analyzing alerts and responding to incidents, which enables your internal resources to focus on the more strategic areas of your business.

Enterprise DevOps is the convergence of modern development best practices (i.e., DevOps) and existing IT process frameworks (i.e., ITIL) to give you speed and agility while maintaining governance, security, and compliance control. AWS Managed Services enables Enterprise DevOps by packaging AWS IaaS services into a secure, compliant development platform that works with most enterprise workloads — not just cloud-native or heavily refactored workloads. AWS Managed Services-powered Enterprise DevOps helps your development teams focus on their applications and innovate faster.

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Appendix A: Total Economic Impact

Total Economic Impact is a methodology developed by Forrester Research that enhances a company's technology decision-making processes and assists vendors in communicating the value proposition of their products and services to clients. The TEI methodology helps companies demonstrate, justify, and realize the tangible value of IT initiatives to both senior management and other key business stakeholders.

Total Economic Impact Approach

Benefits represent the value delivered to the business by the product. The TEI methodology places equal weight on the measure of benefits and the measure of costs, allowing for a full examination of the effect of the technology on the entire organization.

Costs consider all expenses necessary to deliver the proposed value, or benefits, of the product. The cost category within TEI captures incremental costs over the existing environment for ongoing costs associated with the solution.

Flexibility represents the strategic value that can be obtained for some future additional investment building on top of the initial investment already made. Having the ability to capture that benefit has a PV that can be estimated.

Risks measure the uncertainty of benefit and cost estimates given: 1) the likelihood that estimates will meet original projections and 2) the likelihood that estimates will be tracked over time. TEI risk factors are based on "triangular distribution."

The initial investment column contains costs incurred at "time 0" or at the beginning of Year 1 that are not discounted. All other cash flows are discounted using the discount rate at the end of the year. PV calculations are calculated for each total cost and benefit estimate. NPV calculations in the summary tables are the sum of the initial investment and the discounted cash flows in each year. Sums and present value calculations of the Total Benefits, Total Costs, and Cash Flow tables may not exactly add up, as some rounding may occur.

Present value (PV)

The present or current value of (discounted) cost and benefit estimates given at an interest rate (the discount rate). The PV of costs and benefits feed into the total NPV of cash flows.

Net present value (NPV)

The present or current value of (discounted) future net cash flows given an interest rate (the discount rate). A positive project NPV normally indicates that the investment should be made, unless other projects have higher NPVs.

Return on investment (ROI)

A project's expected return in percentage terms. ROI is calculated by dividing net benefits (benefits less costs) by costs.

Discount rate

The interest rate used in cash flow analysis to take into account the time value of money. Organizations typically use discount rates between 8% and 16%.

Payback period

The breakeven point for an investment. This is the point in time at which net benefits (benefits minus costs) equal initial investment or cost.

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Appendix B: Endnotes

[1] Source: "Cloud Powers The Modern Adaptive Enterprise," Forrester Research, Inc., October 11, 2019.

[2] Source: "Optimize Your Cloud Organization For Speed And Customer Delight", Forrester Research, Inc., October 26, 2018.

[3] Source: "Use Modernization And Migration Services To Speed Your Cloud Migration," Forrester Research, Inc., June 4, 2019.

[4] Source: "2019 Cost of a Data Breach Report," Ponemon Institute, 2019.

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