The Total Economic Impact™ Of IBM Cloud Application Performance Management (APM)

Cost Savings And Business Benefits Enabled By IBM Cloud APM

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Key Benefits

Reduced downtime for applications monitored with IBM Cloud APM compared to prior tools:
60% reduction in downtime

Efficiency created by IBM Cloud APM for IT operations and developers:
At least 55% efficiency gained by users of IBM Cloud APM

Benefits of reduced downtime to the business:
$1.6M in additional end-user productivity

Executive Summary

IBM commissioned Forrester Consulting to conduct a Total Economic Impact™ (TEI) study and examine the potential return on investment (ROI) enterprises may realize by deploying IBM Cloud Application Performance Management (APM). The purpose of this study is to provide readers with a framework to evaluate the potential financial impact of IBM Cloud APM on their organizations.

To better understand the benefits, costs, and risks associated with this investment, Forrester interviewed and surveyed several customers with experience using IBM Cloud APM. IBM Cloud APM detects and isolates problems within application and infrastructure environments, providing all the capability of IBM Monitoring and adding user experience monitoring, transaction tracking, and expanded coverage for application resource monitoring.

Prior to using IBM Cloud APM, the interviewed and surveyed organizations were using a competitive monitoring tool. This prior tool provided resource monitoring and some application monitoring, but it was difficult to use and maintain, and it lacked key functionality to enhance monitoring capability and keep up with newer workloads. This resulted in: reduced visibility into the health and performance of the environment; longer and more frequent outages; and a reactive approach to resolving performance issues. These problems were exacerbated by the growing complexity of the environment. With the increasing focus on application performance and user experience in the age of the customer, these organizations sought a better monitoring solution that could reduce the risk to their brand from downtime and poor application performance.

With IBM Cloud APM, these organizations improve their monitoring coverage of their entire environment through a single console. Organizations use performance threshold alerting and analytics to prevent incidents before they occur. IBM Cloud APM's application topology, transaction tracking, and end-user experience monitoring, provide a detailed view into user experience, allowing for fast problem identification. Deep dive diagnostics and log search help developers quickly diagnose and fix application performance issues. The overall result is improved application availability, improved application response time, and greater confidence in application performance and user experience for key mission critical applications.

For an overview of key features, see Appendix B.

Key Findings

Quantified benefits. The following risk-adjusted present value (PV) quantified benefits are representative of those experienced by the organizations interviewed and surveyed:

› **IBM Cloud APM reduces downtime for mission critical applications by 60%.** With end-user experience monitoring, transaction tracking, and Predictive Insights (PI), organizations proactively address application performance issues before they become outages and address outages faster than with previous tools. In addition to a 60% reduction in overall application downtime, surveyed organizations also experienced an average 36% improvement in application response time. Organizations feel more confident that users' experience with applications is positive.

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ROI
139%

Benefits PV
$11.2 million
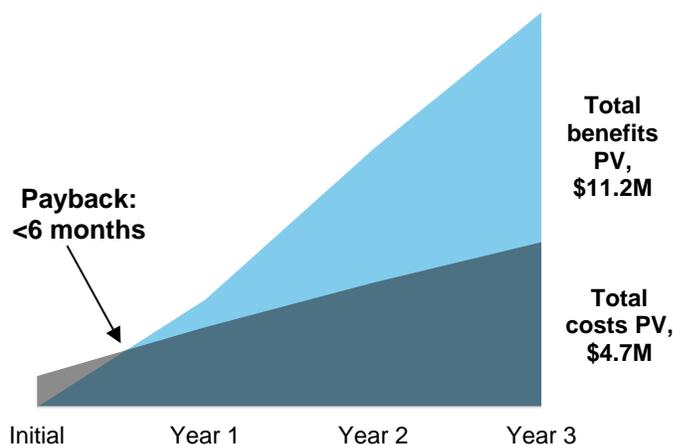
NPV
$6.5 million

Payback
<6 months

› **IBM Cloud APM reduces time spent by IT operations and developers on application performance management by 55% to 60%.** IT operations teams spend less time identifying application performance issues with Predictive Insights alerting, resource monitoring, and synthetic monitoring. Developers spend less time diagnosing issues with deep dive diagnostics and log analytics.

› **Reduced downtime for key business applications improves end-user productivity.** Employee facing applications experience a 60% reduction in annual downtime with IBM Cloud APM, resulting in additional productivity for application users.

› **Replacing prior tools with IBM Cloud APM results in $250,000 per year in cost savings and an almost 10% reduction in administration time**. Prior tools were more difficult to manage and maintain, cost more per year, and did not have as much functionality as IBM Cloud APM.

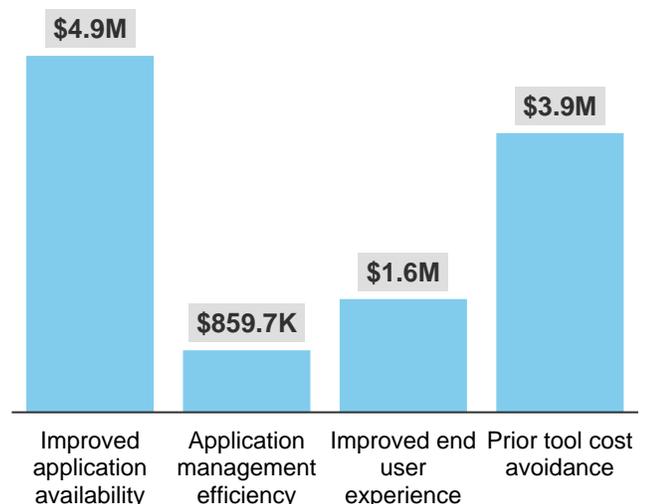**Costs.** The organizations experienced the following risk-adjusted PV costs:

› **Organizations pay subscription costs for IBM Cloud APM Advanced.** The IBM Cloud APM subscription costs covers servers in both the production and test environments and includes Log Analytics, Predictive Insights, and Synthetic Monitoring.

› **Organizations incur costs related to the deployment of IBM Cloud APM.** This could include a small proof of concept (POC) with back-office applications prior to full deployment. Internal staff partner with IBM services to deploy IBM Cloud APM, and IBM services also provides training for IBM Cloud APM users.

› **Three administrators manage IBM Cloud APM on an ongoing basis.** Administrators spend 50% of their time managing and maintaining IBM Cloud APM, an almost 10% reduction compared to prior tools.

Forrester's interviews with an existing customer, survey of 53 customers, and subsequent financial analysis found that an organization based on these customers experienced benefits of $11.2 million over three years versus costs of $4.7 million, adding up to a net present value (NPV) of $6.5 million and an ROI of 139%.

Financial Summary

Payback:
<6 months

Total benefits PV, $11.2M

Total costs PV, $4.7M

Initial   Year 1   Year 2   Year 3

Benefits (Three-Year)

$4.9M

$3.9M

$1.6M

$859.7K

Improved application availability | Application management efficiency | Improved end user experience | Prior tool cost avoidance

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TEI Framework And Methodology

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

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 IBM Cloud APM can have on an organization:

DUE DILIGENCE
Interviewed IBM stakeholders and Forrester analysts to gather data relative to IBM Cloud APM.

CUSTOMER INTERVIEWS AND SURVEY
Interviewed one organization and surveyed 53 organizations using IBM Cloud APM to obtain data with respect to costs, benefits, and risks.

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

FINANCIAL MODEL FRAMEWORK
Constructed a financial model representative of the interviews and survey 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 IBM Cloud APM's 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.

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

DISCLOSURES

Readers should be aware of the following:

This study is commissioned by IBM and delivered by Forrester Consulting. It is not meant to be used as a competitive analysis.

Forrester makes no assumptions as to the potential ROI that other organizations will receive. Forrester strongly advises that readers use their own estimates within the framework provided in the report to determine the appropriateness of an investment in IBM Cloud APM.

IBM reviewed and provided feedback to Forrester, but Forrester maintains editorial control over the study and its findings and does not accept changes to the study that contradict Forrester's findings or obscure the meaning of the study.

IBM did not participate in the customer interview.

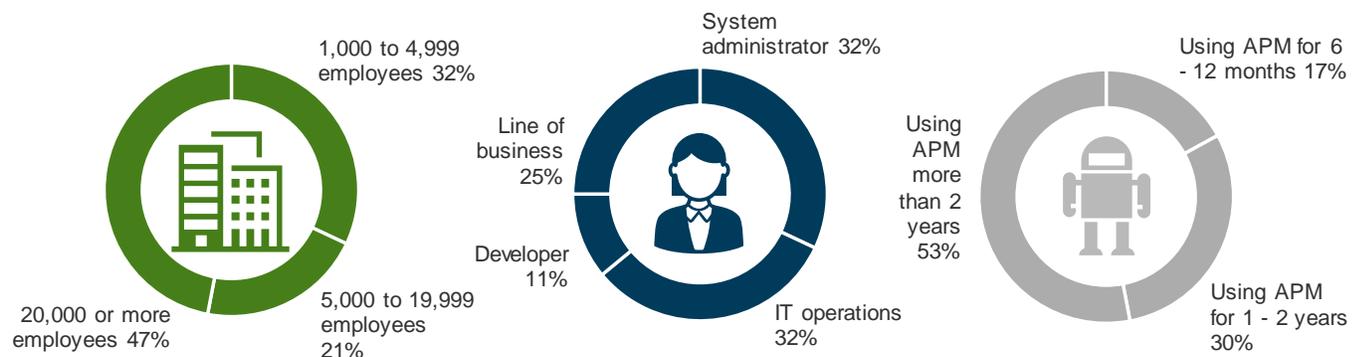FORRESTER®

The IBM Cloud APM Customer Journey

BEFORE AND AFTER THE IBM CLOUD APM INVESTMENT

Interviewed Organizations

For this study, Forrester conducted one interview with an IBM Cloud APM customer. The interviewed organization is a large financial services firm headquartered in Europe with over 85,000 employees and over $30 billion in annual revenue. The organization has been using IBM Cloud APM for two years across over 5,000 virtual machines (VMs) supporting front- and middle-office applications.

Surveyed Organizations

For this study, Forrester surveyed 53 IT and business decision makers based in the United States.

1,000 to 4,999 employees 32%

20,000 or more employees 47%

5,000 to 19,999 employees 21%

System administrator 32%

Line of business 25%

Developer 11%

IT operations 32%

Using APM for 6 - 12 months 17%

Using APM more than 2 years 53%

Using APM for 1 - 2 years 30%

Key Challenges

Prior to investing in IBM Cloud APM, the organizations experienced several key challenges, including:

› **Prior to the IBM Cloud APM investment, organizations were using older tools that had functionality gaps, limiting visibility across applications.** While these tools provided base resource monitoring and some application monitoring, they lacked functionality like end-user experience monitoring and transaction tracking. These older tools were also cumbersome to deploy and maintain, and the user interface further impacted visibility of the environment.

› **Traditional monitoring tools struggled to keep up with applications developed using more modern features and platforms.** These newer workloads required a more advanced and robust application monitoring capability that previous tools could not provide.

› **With more complex applications, outages could be frequent and difficult to resolve, resulting in business-impacting downtime.** As environments and applications become more complex, the ability to prevent, isolate, diagnose, and resolve outages becomes more difficult and requires better tools. The risk to the business from outages of key customer-facing applications makes the prevention and swift resolution of outages a key priority.

> "There are severe consequences of outages. It's reputational risk, it's financial risk to the organization. So that's why we have to have a really solid APM."
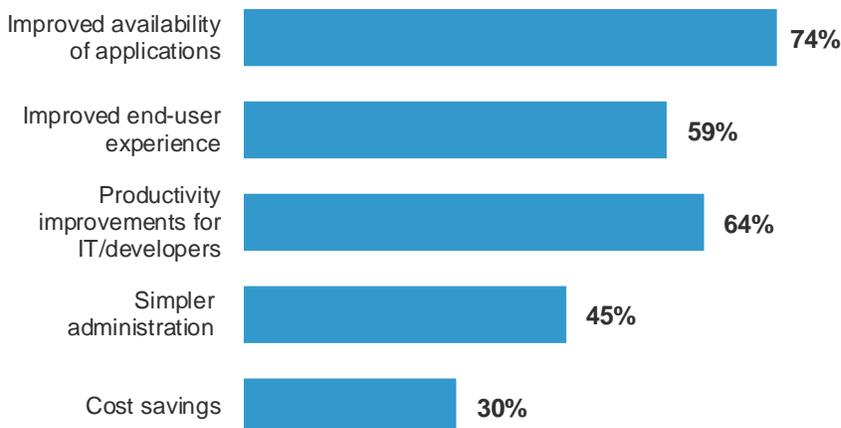>
> *VP of IT, financial services*

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Key Results

The interviews and survey data revealed that key results from the IBM Cloud APM investment include:

> For a description of the key features, see **Appendix B: Key Features**.

> **IBM Cloud APM provides better visibility into key business applications across environments.** IBM Cloud APM delivers the topology of applications, providing crucial visibility into the components that factor in to application performance. Tools like transaction tracking enable users to see how long each step in a transaction takes, allowing comparisons to historical figures and analysis of the effect of changes on performance.

> **Baselines set in IBM Cloud APM and learned through Predictive Insights help to prevent outages with threshold alerting.** The Predictive Insights integration enables organizations to view historical data analytics to detect anomalies or open events. Organizations can use the information that is gathered to prevent further issues and to determine actions to take. When thresholds are breached, alerts are sent to enable proactive maintenance to reduce the risk of outages.

> **Features like transaction tracking, deep-dive diagnostics, and log search help operations teams and developers triage and resolve outages faster.** Operations teams and developers can use IBM Cloud APM functionality to quickly isolate, diagnose, and resolve outages, limiting application downtime and allowing these teams to focus more time on strategic tasks.

> **Fewer outages, less downtime per outage, and improved response times have a critical impact on the business.** With IBM Cloud APM, organizations can deliver better experiences to customers and employees, reducing the risk of lost business, reducing the risk to the organization's brand, and improving employee productivity.

"Please indicate which benefits your organization has experienced due to the investment in IBM Cloud APM, compared to your prior environment" (Select all that apply)

Benefit	Percentage
Improved availability of applications	74%
Improved end-user experience	59%
Productivity improvements for IT/developers	64%
Simpler administration	45%
Cost savings	30%

Base: 53 IT and business decision makers in the United States

Source: A commissioned study conducted by Forrester Consulting on behalf of IBM, February 2018

"IBM Cloud APM is a single pane of glass for both on-premises and cloud environments, so that has simplified our monitoring. All end users, like developers, production support, infrastructure teams, we all look at the same dashboard. There are no longer any discrepancies, we don't have to reconcile data."

VP of IT, financial services

"For the web applications, we can get much more accurate timing with IBM Cloud APM. And that gives us a lot of insight because we get to see the stats in real time on the IBM Cloud APM dashboard. We have much more confidence in the overall user experience."

VP of IT, financial services

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Composite Organization

Based on the interviews and survey, Forrester constructed a TEI framework, a composite company, and an associated ROI analysis that illustrates the areas financially affected. The composite organization is representative of the company that Forrester interviewed and the 53 organizations Forrester surveyed, and it is used to present the aggregate financial analysis in the next section. The composite organization that Forrester synthesized from the customer data has the following characteristics:

Description of composite. The composite is a global organization with 30,000 employees and $5 billion in annual revenue. The organization was using a competitive application monitoring tool prior to investing in IBM Cloud APM.

Deployment characteristics. The organization invested in IBM Cloud APM to leverage advanced functionality to further improve application availability. The organization deployed IBM Cloud APM Advanced across 4000 servers in the production environment and 400 servers in the test environment. The organization also deployed Log Analytics, Predictive Insights, and Synthetic Monitoring. The organization uses IBM Cloud APM for 100% of its mission critical applications in the front and middle office, and IBM Cloud APM is used by 110 users, including 40 operations staff and 30 developers.

Key assumptions
4,000 production servers
100% mission critical apps
110 total users

IBM Cloud APM Advanced, Predictive Insights, Log Analytics, Synthetic Monitoring

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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	Improved application availability	$1,215,000	$2,430,000	$2,430,000	$6,075,000	$4,938,505
Btr	Application management efficiency	$209,653	$424,116	$424,116	$1,057,884	$859,747
Ctr	Improved end-user experience	$386,033	$772,065	$772,065	$1,930,163	$1,569,073
Dtr	Prior tool cost avoidance	$1,555,200	$1,555,200	$1,555,200	$4,665,600	$3,867,552
	Total benefits (risk-adjusted)	$3,365,886	$5,181,381	$5,181,381	$13,728,647	$11,234,877

Improved Application Availability

The interviewed and surveyed organizations shared the following benefits related to application availability:

> Application availability and performance are important factors in customer retention, customer acquisition, and overall brand reputation. When applications are too slow or if applications experience outages, organizations risk impact to their brand and they risk losing business.

> Several features of IBM Cloud APM enable organizations to work proactively to prevent outages and to quickly identify problems when they occur.

> Organizations use end-user experience monitoring to understand the user experience and response times. Organizations also use synthetic monitoring to test the impact of changes on application performance before releasing those changes, preventing incidents and outages.

> Organizations use transaction tracking to understand the performance of an application at each step and to isolate bottlenecks that can be fixed to improve performance.

> Organizations can also use Predictive Insights to collect performance metrics, learn thresholds over time, and send proactive alerts when behavior is abnormal.

> Combined with the functionality that allows operations and developers to more quickly resolve outages (see next benefit category), interviewed and surveyed organizations realized a 40% to 60% reduction in outages and up to 50% reduction in downtime per outage.

For the composite analysis, Forrester assumed:

> The composite organization had 20 customer-facing applications monitored by IBM Cloud APM with a targeted SLA of at least 99.99% availability.

> Prior to using IBM Cloud APM, these applications experienced a total of 30 outage hours per year, on average.

> With IBM Cloud APM, the organization reduces downtime for these

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 more than $11 million.

"We were able to do full-blown end-to-end testing and we basically identified bottlenecks before they occurred in production."

VP of IT, financial services

36%

"What has been the overall improvement in application response time due to IBM Cloud APM?"

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applications by up to 60%. Forrester conservatively assumes a 50% learning curve in Year 1.

› Forrester assumes that the average cost of downtime for these applications is $150,000 per hour.

Risks that could affect this benefit calculation include:

› Organizations that use IBM Cloud APM reactively, to respond to incidents and outages, but not proactively, to continuously improve performance, may see lower levels of benefits.

› The increase in data and functionality compared to the prior environment will affect the length of the learning curve.

To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year risk-adjusted total PV of $4.9 million.

> 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.

Improved Application Availability: Calculation Table					
REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
A1	Hours of downtime, front office, before IBM Cloud APM		30	30	30
A2	Percent reduction in downtime with IBM Cloud APM		30%	60%	60%
A3	Hours of downtime, front office, with IBM Cloud APM	A1*(1-A2)	21	12	12
A4	Average cost per hour of downtime		$150,000	$150,000	$150,000
At	Improved application availability	(A1-A3)*A4	$1,350,000	$2,700,000	$2,700,000
	Risk adjustment	↓10%			
Atr	Improved application availability (risk-adjusted)		$1,215,000	$2,430,000	$2,430,000

Application Management Efficiency

The interviewed and surveyed organizations shared the following benefits related to application performance management efficiency:

› As applications become more complex, identifying and diagnosing application performance issues becomes increasingly difficult.

› With IBM Cloud APM's resource monitoring, Predictive Insights alerts, and synthetic monitoring, IT operations teams can more quickly identify where performance issues occur and can identify them earlier in the development of those issues. Interviewed and surveyed organizations realized IT operations efficiency for application monitoring of 50% to over 60% with IBM Cloud APM. One organization mentioned that the efficiency gained with IBM Cloud APM allowed the organization to avoid hiring additional staff.

› Developers can use transaction tracking to isolate and fix performance bottlenecks, and they can use deep-dive diagnostics and log analytics to more quickly diagnose problems and find solutions.

For the composite analysis, Forrester assumed:

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> Forty IT operations staff and 30 developers use IBM Cloud APM as part of their jobs. On average, both operations and developers use IBM Cloud APM during 25% of their work hours.

> IT operations staff are 60% more efficient in their application management tasks with IBM Cloud APM compared to prior tools. Developers are 55% more efficient. Forrester assumes a 50% learning curve in Year 1.

> On average, operations staff have a $56,000 annual fully-loaded compensation, while developers have an annual $135,000 fully-loaded compensation.

> Forrester conservatively assumes that 50% of saved time is repurposed for additional productive work.

Risks that could affect this benefit calculation include:

> Organizations that use IBM Cloud APM reactively, to respond to incidents and outages, but not proactively, to continuously improve performance, may see lower levels of benefits.

> The increase in data and functionality compared to the prior environment will affect the length of the learning curve.

To account for these risks, Forrester adjusted this benefit downward by 5%, yielding a three-year risk-adjusted total PV of $860,000.

> "Usually when things go wrong, it's not just one component. It's multiple components. A component can, by itself, trigger incidents, and when you combine them it's a snowballing effect that causes large-scale outages. So before, we had to do analysis at the most granular level possible. That is time consuming. We were doing a lot of unnecessary root cause analysis. We didn't have a proper topology-based dependency chart. So that's the benefit of IBM Cloud APM. It gives you a hierarchy of configuration items, and you can drill from the top down, so you're not overwhelmed when you do root cause analysis."
>
> *VP of IT, financial services*

REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
Application Management Efficiency: Calculation Table					
B1	IT operations staff using IBM Cloud APM		40	40	40
B2	Percent of time spent on application performance management		25%	25%	25%
B3	IT operations savings with IBM Cloud APM		30%	60%	60%
B4	IT operations average annual fully-loaded compensation		$56,000	$56,000	$56,000
B5	Developer staff using IBM Cloud APM		30	30	30
B6	Percent of time spent on application performance management		25%	25%	25%
B7	Developer savings with IBM Cloud APM		27%	55%	55%
B8	Developer average annual fully-loaded compensation		$135,000	$135,000	$135,000
B9	Productivity capture		50%	50%	50%
Bt	Application management efficiency	((B1*B2*B3*B4)+(B5*B6*B7*B8)*B9	$220,688	$446,438	$446,438
	Risk adjustment	↓5%			
Btr	Application management efficiency (risk-adjusted)		$209,653	$424,116	$424,116

Improved End-User Experience

The interviewed and surveyed organizations shared the following benefits related to improved end-user experience:

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> In addition to improving customer experience with applications, organizations also sought to improve internal end-user experience with applications. Organizations wanted to ensure that key business applications had minimal downtime so that employees could be optimally productive, and they also wanted to ensure that user's experiences with applications were optimized.

For the composite analysis, Forrester assumed:

> The organization's employees rely on 30 front- and middle-office applications to complete key work tasks.

> Prior to using IBM Cloud APM, the organization has an average of 215 hours of downtime per year across these applications.

> With IBM Cloud APM, the organization reduces downtime by up to 60%, including a 50% learning curve in Year 1.

> On average, each hour of downtime impacts 350 employees. The average hourly fully-loaded compensation across employees is $36 per hour.

> Forrester conservatively assumes that 50% of saved time is repurposed for additional productive work.

Risks that could affect this benefit calculation include:

> Organizations varied in terms of number of applications relevant for business roles and number of employees impacted by application downtime.

> It is difficult to assess how much avoided downtime is repurposed for additional work. Forrester conservatively estimates that 50% of downtime can be repurposed, but this could fluctuate based on role, application, or amount of time saved.

To account for these risks, Forrester adjusted this benefit downward by 5%, yielding a three-year risk-adjusted total PV of $1.6 million.

Almost 130 hours of downtime per year are avoided for key business applications used by employees.

REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
	Improved End-User Experience: Calculation Table				
C1	Hours of downtime, key business applications, before IBM Cloud APM		215	215	215
C2	Percent reduction in downtime with IBM Cloud APM		30%	60%	60%
C3	Hours of downtime, key business applications, with IBM Cloud APM	C1*(1-C2)	151	86	86
C4	Average end users affected per outage		350	350	350
C5	Average hourly fully-loaded compensation	$75,000/2080	$36	$36	$36
C6	Productivity capture		50%	50%	50%
Ct	Improved end-user experience	(C1-C3)*C4 *C5*C6	$406,350	$812,700	$812,700
	Risk adjustment	↓5%			
Ctr	Improved end-user experience (risk-adjusted)		$386,033	$772,065	$772,065

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Prior Tool Cost Avoidance

The interviewed and surveyed organizations shared the following benefits related to previous tools:

› Most interviewed and surveyed organizations were using a comparative tool prior to using IBM Cloud APM. These tools provided resource monitoring and a base layer of application monitoring functionality. One organization used an in-house tool at significant cost. Replacing these previous tools with IBM Cloud APM improved application monitoring functionality, resulting in the benefits above, and also resulted in overall lower costs, on average.

For the composite analysis, Forrester assumed:

› The average annual cost for prior internal and vendor tools that IBM Cloud APM replaced was $1.53 million.

› The prior tools required three administrators for ongoing management and maintenance. These administrators spent 55% of their time on application performance management tools.

› The average annual fully-loaded compensation for an administrator is $120,000.

› Forrester includes the total cost for the prior environment as an avoided cost in this benefit. This is offset by the cost of IBM Cloud APM included in the cost section below. The net savings include $250,000 saved per year in license and support costs and an almost 10% time savings for administrators.

Risks that could affect this benefit calculation include:

› Previous tools and processes can vary greatly from organization to organization and will result in differing cost savings. Organizations that use in-house tools prior to IBM Cloud APM may experience significantly higher cost savings.

To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year risk-adjusted total PV of $3.9 million.

87%

of survey respondents were using an application monitoring tool prior to IBM Cloud APM

Prior Tool Cost Avoidance: Calculation Table					
REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
D1	Prior tool annual cost		$1,530,000	$1,530,000	$1,530,000
D2	Number of prior tool admins		3	3	3
D3	Percent of time spent on application performance management admin		55%	55%	55%
D4	Average admin annual fully loaded compensation		$120,000	$120,000	$120,000
Dt	Prior tool cost avoidance	D1+(D2*D3*D4)	$1,728,000	$1,728,000	$1,728,000
	Risk adjustment	↓10%			
Dtr	Prior tool cost avoidance (risk-adjusted)		$1,555,200	$1,555,200	$1,555,200

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Flexibility

The value of flexibility is 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 IBM Cloud APM and later realize additional uses and business opportunities, including:

> **Integrating with additional software, like event management, ticketing, notification systems, and alerting, to create an end-to-end IT service management solution.** Integrations can create more efficiency across processes, whether integrating different vendor solutions or IBM solutions. One organization noted an additional benefit when integrating IBM solutions, saying, "These IBM products are highly coupled, and they give you a seamless user experience because of similar dashboards and look and feel, it's really identical. That helped us to reduce a lot of training efforts required whenever we introduce new tools."

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

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**
Etr	IBM Cloud APM costs	$0	$1,344,000	$1,344,000	$1,344,000	$4,032,000	$3,342,329
Ftr	Deployment costs	$884,554	$0	$0	$0	$884,554	$884,554
Gtr	Ongoing management	$0	$189,000	$189,000	$189,000	$567,000	$470,015
	Total costs (risk-adjusted)	$884,554	$1,533,000	$1,533,000	$1,533,000	$5,483,554	$4,696,898

IBM Cloud APM Costs

For the composite analysis, Forrester assumed:

› The composite, like the interviewee and most of the surveyed organizations, deployed IBM Cloud APM Advanced.

› Subscription costs include IBM Cloud APM Base for 400 test servers, IBM Cloud APM Advanced for 4,000 production servers, Predictive Insights, Log Analytics, and Synthetic Monitoring.

› Subscription costs include IBM support.

› Costs are representative of a typical discount.

Risks that could affect this cost calculation include:

› Software costs are variable based on other products licensed with the vendor and volume discounts.

› Organizations that choose: 1) IBM Cloud APM Base; 2) an on-premises or hybrid deployment; 3) or choose to not use extension functionality will all experience different costs.

To account for these risks, Forrester adjusted this cost upward by 5%, yielding a three-year risk-adjusted total PV of $3.3 million.

> 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 almost $4.7 million.

> 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.

	IBM Cloud APM Costs: Calculation Table					
REF.	**METRIC**	**CALC.**	**INITIAL**	**YEAR 1**	**YEAR 2**	**YEAR 3**
Et	IBM Cloud APM costs		$0	$1,280,000	$1,280,000	$1,280,000
	Risk adjustment	↑5%				
Etr	IBM Cloud APM costs (risk-adjusted)		$0	$1,344,000	$1,344,000	$1,344,000

Deployment Costs

The interviewed and surveyed organizations shared the following cost factors related to deployment:

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- The customer interviewee and most of the surveyed organizations chose a SaaS deployment for IBM Cloud APM.

- Deployment steps could include a short POC, server setup and deployment, the configuration and installation of monitoring agents, and integrations with other systems.

For the composite analysis, Forrester assumed:

- Deployment of IBM Cloud APM involved both internal staff and IBM services.

- Internal staff spend 2,100 hours on the full deployment of IBM Cloud APM over the course of one to two months. In addition, staff spend a total of 440 hours on training provided by IBM.

- The average cost for IBM services support was $700,000.

Risks that could affect this cost calculation include:

- The costs for deployment can vary significantly based on environment and deployment complexity, staff skill levels, and required professional services support.

To account for these risks, Forrester adjusted this cost upward by 10%, yielding a three-year risk-adjusted total PV of $885,000.

"Which systems have you integrated with IBM Cloud APM?"

	Event mgmt	Ticketing	Alerting
	93%	71%	79%
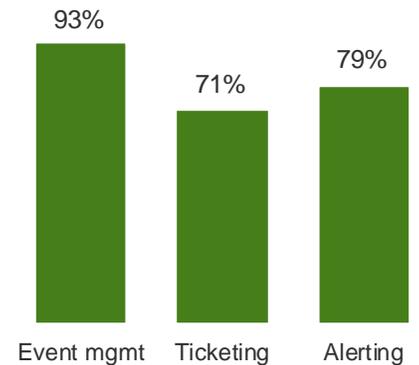
Deployment Costs: Calculation Table

REF.	METRIC	CALC.	INITIAL	YEAR 1	YEAR 2	YEAR 3
F1	Internal hours spent on deployment		2,100			
F2	Internal hours spent on training		440			
F3	Average hourly fully-loaded compensation		$41			
F4	Professional services costs		$700,000			
Ft	Deployment costs	((F1+F2)*F3)+F4	$804,140	$0	$0	$0
	Risk adjustment	↑10%				
Ftr	Deployment costs (risk-adjusted)		$884,554	$0	$0	$0

Ongoing Management

The interviewed and surveyed organizations shared the following cost factors related to ongoing management:

- Once IBM Cloud APM is deployed, management of IBM Cloud APM is fairly straightforward. Management tasks may include deployment of additional agents, tuning of agents to collect different data, and occasional updates of agents.

For the composite analysis, Forrester assumed:

- Three administrators manage IBM Cloud APM on an ongoing basis.

- Administrators spend 50% of their time on management of IBM Cloud APM, an almost 10% reduction compared to previous tools.

Three FTEs spend 50% of their time on ongoing management of IBM Cloud APM.

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> The average fully-loaded annual compensation for administrators is $120,000.

Risks that could affect this cost calculation include:

> There was slight variability among interviewed and surveyed organizations in administrator team size and time requirements based on the scale and scope of the IBM Cloud APM deployment.

> More complex configuration or use of agents may require ongoing professional services engagements depending on internal staff skill.

To account for these risks, Forrester adjusted this cost upward by 5%, yielding a three-year risk-adjusted total PV of $470,000.

REF.	METRIC	CALC.	INITIAL	YEAR 1	YEAR 2	YEAR 3
Ongoing Management: Calculation Table						
G1	Number of APM admins			3	3	3
G2	Percent of time spent on APM admin			50%	50%	50%
G3	Average admin annual fully-loaded compensation			$120,000	$120,000	$120,000
Gt	Ongoing management	G1*G2*G3	$0	$180,000	$180,000	$180,000
	Risk adjustment	↑5%				
Gtr	Ongoing management (risk-adjusted)		$0	$189,000	$189,000	$189,000

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Financial Summary

CONSOLIDATED THREE-YEAR RISK-ADJUSTED METRICS

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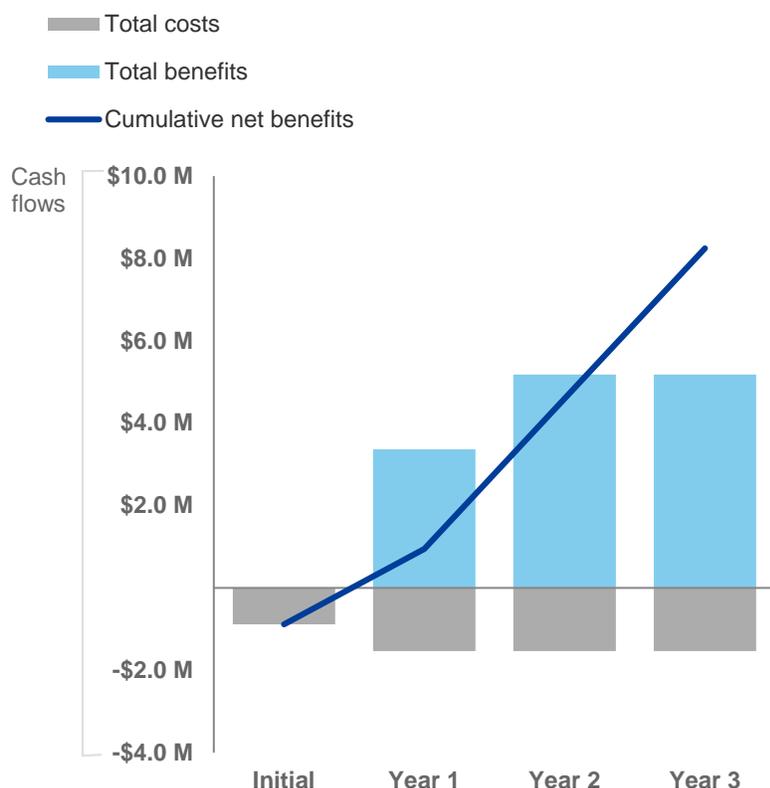
The financial results calculated in the Benefits and Costs sections can be used to determine the ROI, NPV, and payback period for the composite organization's investment. Forrester assumes a yearly discount rate of 10% for this analysis.

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 Table (Risk-Adjusted)

|	INITIAL	YEAR 1	YEAR 2	YEAR 3	TOTAL	PRESENT VALUE
Total costs	($884,554)	($1,533,000)	($1,533,000)	($1,533,000)	($5,483,554)	($4,696,898)
Total benefits	$0	$3,365,886	$5,181,381	$5,181,381	$13,728,647	$11,234,877
Net benefits	($884,554)	$1,832,886	$3,648,381	$3,648,381	$8,245,093	$6,537,979
ROI						139%
Payback period						<6 months

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IBM Cloud APM: Overview

The following information is provided by IBM. Forrester has not validated any claims and does not endorse IBM.

Applications are the mainstay of modern business. Applications deliver business-critical services to customers and enable companies to function efficiently. To facilitate performance and availability of applications in our clients' environments, IT operations teams, lines of business/application owners, application support teams, and development operations (DevOps) teams must have full visibility and control of the applications and enabling infrastructure. If an outage or slowdown occurs, clients need to know precisely where the problem originated (regardless of where the application resides: in the cloud, on-premises, or in a hybrid environment spanning both cloud and on-premises), how end users are impacted, what caused the issue, and how to prevent it from occurring again.

IBM Cloud Application Performance Management (APM) helps you identify, isolate, and diagnose availability and performance problems in hybrid application environments — infrastructure, middleware, and applications.

› **Identify performance issues before users are affected**. The solution includes a unified user interface that provides a single view across on-premises, public, and private cloud applications; easy-to-navigate dashboards; monitoring coverage; and the ability to understand application availability and performance from multiple geographical areas (and from behind your own firewall) using simple to use synthetic monitoring.

› **Isolate where a problem is occurring**. Clients gain visibility of the end-user experience to pinpoint problems and isolate bottlenecks before service-level agreements (SLAs) are impacted. The solution can track 100% of application transactions through the entire application domain.

› **Diagnose and resolve problems faster, before the business is impacted**. Clients can use the solution to search and diagnose problems quickly and effectively. The solution can determine the exact moment an application experiences an issue. With its tight integration with IBM's analytics capabilities, IBM's APM solution can recognize anomalous behavior to predict potential outages.
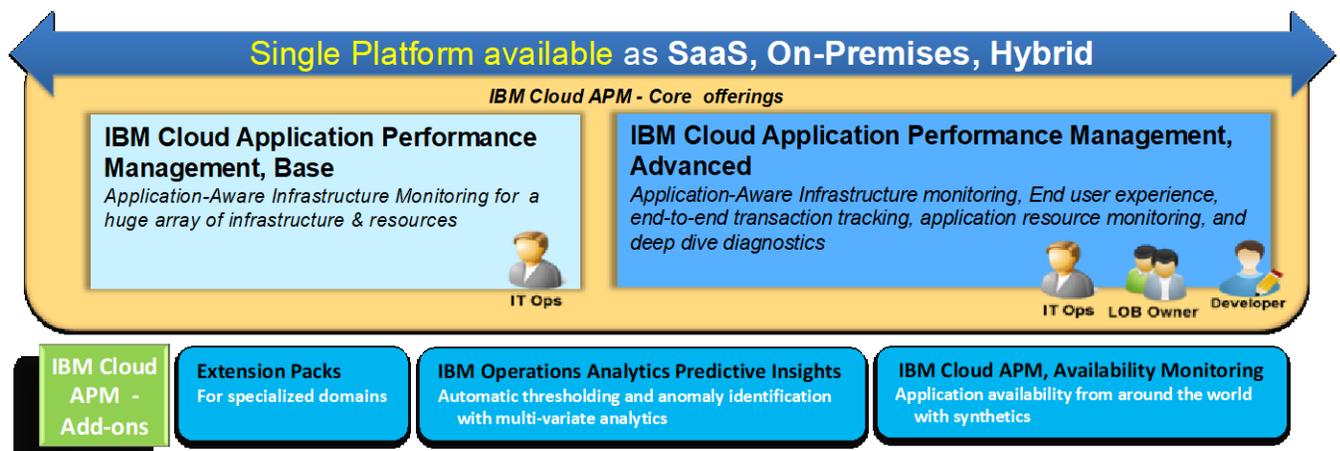
By adopting DevOps practices and transitioning to cloud native, many clients are modernizing their application environment and changing the way applications are built and deployed, i.e., microservices-based applications and cloud-based deployments. IBM Cloud APM can support you today with a single monitoring solution that supports you regardless of where you are in your modernization or cloud adoption activities.

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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: Key Features

The following key pieces of functionality mentioned throughout the report are defined as:

› **Predictive Insights alerting.** The integration with PI enables you to view historical data analytics to detect any anomalies or open events. Any events that include anomalies are reported with an anomaly icon in the IBM Cloud APM dashboard. Use the applications dashboard to drill down further to view an analysis of the anomaly and the components where the anomaly occurred. From there, you can return to the IBM Cloud APM dashboard to view any system-related events that might have occurred. Use all the information that you gather to prevent further issues and to determine any actions that you need to take.

› **Synthetic monitoring.** Synthetic transactions monitor the performance and availability of internal and external applications. You can generate simple scripts to test the availability of a web application and you can record scripts to simulate users working on web applications across different locations. Additionally, you can create thresholds and resource groups to raise events and notify stakeholders when your applications are slow or unavailable. You can also view performance data and generate historical reports in the Application Performance Dashboard.

› **Deep-dive diagnostics.** As you encounter issues across applications, you can easily determine the root cause by doing deep-dive diagnostics. In selecting an application with an issue, you are provided with a request and response time chart to view any slow or failed application requests or response times, and you can drill down further to see the end-user transactions. Detailed metrics are provided across users, sessions, and devices. By drilling down more, you can view the transaction details and a topology associated with the failing transaction enabling you to diagnose issues very quickly.

› **Log file monitoring.** The OS agents are configured automatically, and you can configure log file monitoring to read log files that you specify in the configuration. Also, you can configure the OS agent to manage events so the events are forwarded to Netcool/OMNIbus, Tivoli Enterprise Console®, or Operations Analytics - Log Analysis.

› **End-user experience.** The applications dashboard shows the applications that might, for example, have a critical status. You can drill down to determine the transactions that are failing and from there view detailed metrics around the user who is experiencing the issues and the device on which the issue is occurring. User metrics provide a view of the users by location across the different geographies. Device metrics provide a detailed view of the different devices that are experiencing issues. Session metrics show the components or applications where the issues are occurring. For example, you can easily determine that a certain user is experiencing a slow response time with a java-based application in a US location.

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