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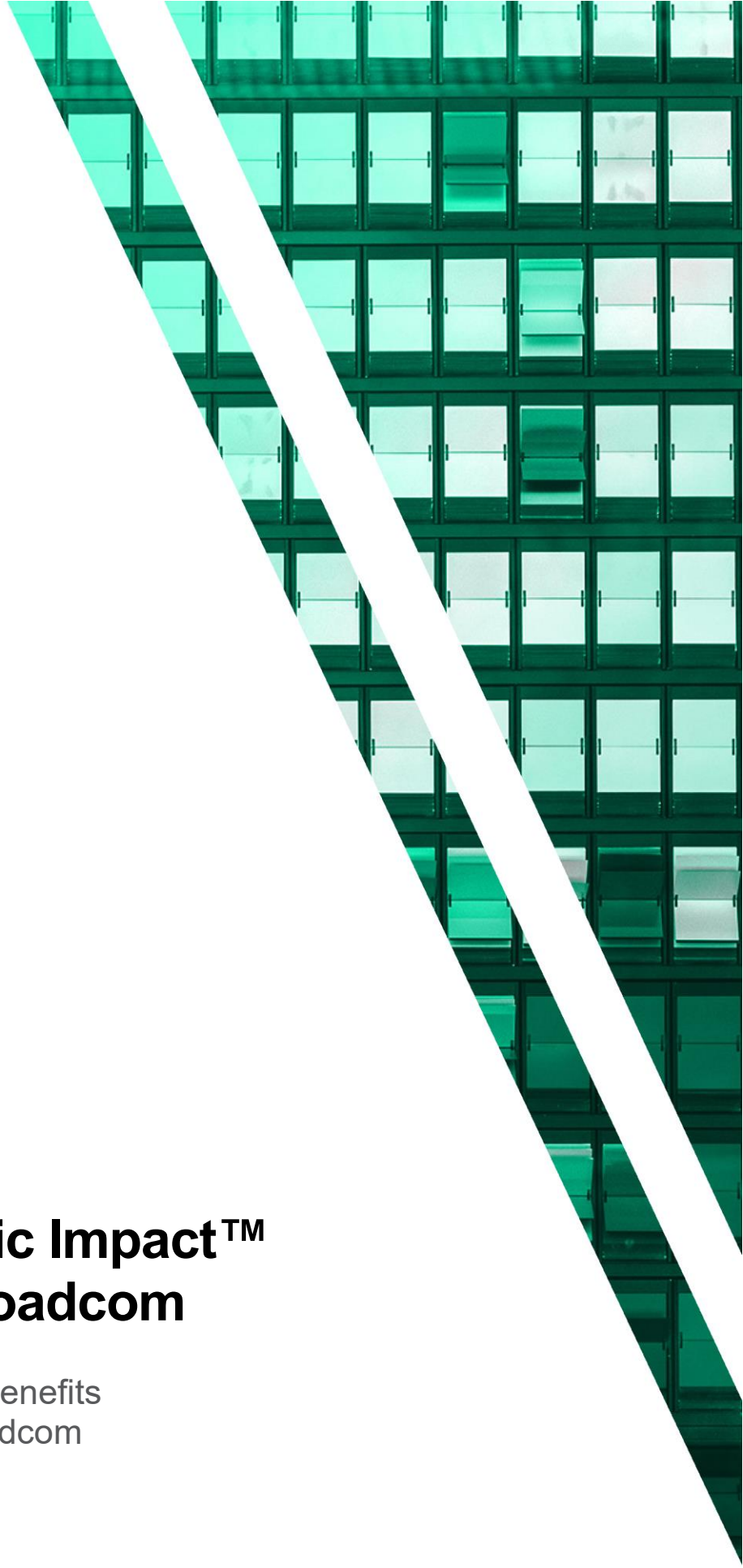

The Total Economic Impact™ Of AIOps From Broadcom

Cost Savings And Business Benefits Enabled By AIOps From Broadcom

DECEMBER 2020

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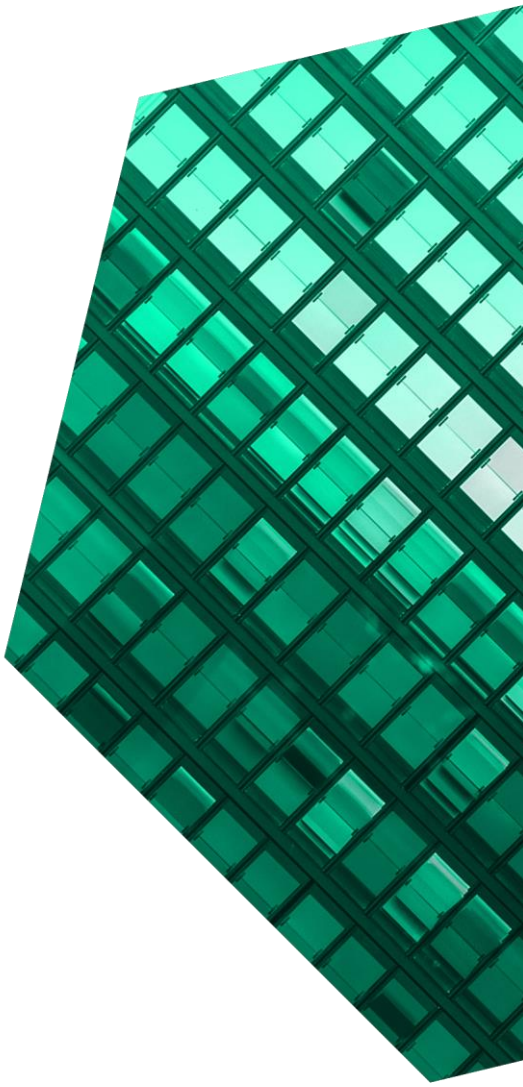


Executive Summary

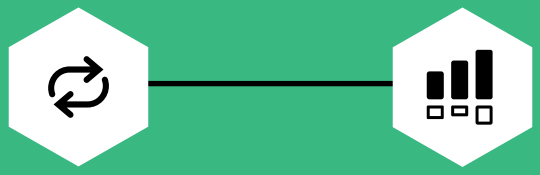
AIOps from Broadcom is an IT infrastructure and operations management solution that is powered by machine learning (ML) algorithms and data science to enable automation of manual processes and autonomous remediation. Interviewees eliminated between 60% to 90% of work identified as toil, freeing up IT professionals to pursue higher value activities. The scope of work for IT operations management at one organization increased by a factor of four without the need for additional hires.

Broadcom commissioned Forrester Consulting to conduct a Total Economic Impact™ (TEI) study and examine the potential return on investment (ROI) enterprises may realize by deploying AIOps from Broadcom. The purpose of this study is to provide readers with a framework to evaluate the potential financial impact of AI for IT operations on their organizations. AIOps combines disparate data from across all primary IT operations functions with analytics and ML to improve availability and performance monitoring, event correlation and analysis, IT service management, and automation.

To better understand the benefits, costs, and risks associated with this investment, Forrester interviewed two organizations with experience using AIOps. Forrester used this experience to project a three-year financial analysis.

Prior to using AIOps, the customer organizations deployed multiple infrastructure and operations management tools to address the growing complexity of their large legacy footprint and emerging cloud footprint. However, this patchwork of homegrown and point solutions could not keep pace with the increasing complexity of their IT landscapes, leaving the interviewed organizations with gaps in their end-to-end visibility and siloed monitoring of infrastructure, applications, and networks. These limitations led to decreased transparency across the IT stack, making it difficult to identify and remediate the root cause of problems.

KEY STATISTICS



Return on investment (ROI)
89%

Net present value (NPV)
$2.54M

After the investment in AIOps from Broadcom, the customer organization reported significantly enhanced infrastructure and application performance and visibility. This new insight when combined with the improved analytics and automation available in AIOps from Broadcom helped the customer organization to identify and eliminate 60% of its manual processes, knocking out 3,200 tickets that would otherwise be manually resolved in its first quarterly sprint. Key results from the investment include an improvement in the effectiveness of IT infrastructure and operations professionals, the automation of manual processes, a reduction in the costs for monitoring tools due to consolidation, additional revenue and productivity from improved uptime, an acceleration in professional development for operations team members, and greater confidence in performance measurements across the IT stack.

Total Three-Year Benefits

$5.4 million

KEY FINDINGS

Quantified benefits. Risk-adjusted present value (PV) quantified benefits include:

- **Increased the effectiveness of IT professionals, valued at $4.3 million.** AIOps from Broadcom enabled better collaboration, digital experience monitoring, and integrations across the IT operations management (ITOM) toolchain. As a result, the scope of work being completed by the ITOM team increased by a factor of four, yet the headcount of the team remained unchanged.
- **Increased automation of manual processes worth $618,221.** AIOps contextualizes and correlates all the data coming into the platform using ML algorithms. With infrastructure, applications, and network teams all visualizing the same performance, ITOM could provide a higher level of automation. Within the first year of implementation, interviewees automated 60% to 90% of targeted manual processes.

Reduced costs for monitoring tools valued at $463,666. Having a single platform that spans infrastructure, applications, networks, and storage enables enterprises to consolidate monitoring software, eliminating some of the burden associated with maintenance (software setup, plug-ins, and add-ons). By avoiding new monitoring tools, the organization avoided the costs associated with training two IT administrators for each tool.

Unquantified benefits. Benefits that are not quantified for this study include:

- **Improved uptime resulting in enhanced customer experience and brand reputation, as well as additional revenue.** The customer organization reported improved system performance with AIOps from Broadcom due to both the visibility it provided of the entire IT landscape and a single platform to run the data analytics. The AI and ML components of AIOps

> **“We are expanding the scope of how we use monitoring technology. We are not just looking at application response times and transaction volumes. We identify signals that are very, very significant to get a good sense of when the business or the operational environment is changing.”**
>
> — Chief architect of infrastructure, business services

accelerated the process of identifying both the root cause of problems and the time it takes to remediate incidents.

- **Consolidated software licensing fees from third-party monitoring tools.** AIOps from Broadcom gives customers the option to retain existing monitoring tools or to replace them with its comprehensive platform. Either way customers benefit from the AI and ML components of the platform. For those that choose to consolidate their software footprint, the savings can be significant.
- **Enhanced professional development for operations teams.** A single platform which provides end-to-end solutions eliminates many monotonous and low-skill tasks. As a result, ITOM professionals are able to focus their attention on more complex, higher value assignments where AI and human intelligence are working together.
- **Increased confidence in performance measurements across the IT stack.** With performance metrics now visible across infrastructure, applications, and network teams, it is easier to observe when there is a problem in two or three places and the metrics are all correlated in real time. This helps to eliminate finger-pointing and expedite incident remediation.

Costs. Risk-adjusted PV costs include:

- **Cost of software licensing fees totaling $2.6 million.** AIOps from Broadcom structures its licensing fees based upon both the number of business-critical devices and the number of clouds and instances. The fees also vary depending on whether the data source is from a third-party monitoring tool. The customer organization in this study had a large, on-premises footprint with roughly 80,000 devices in total.
- **Cost of planning and implementation totaling $67,620.** The customer organization accessed professional services to assist with the implementation. In addition, six FTEs spent a week working on the deployment.
- **Cost of supporting infrastructure totaling $72,069.** Ongoing maintenance costs were tied to the footprint of the hybrid cloud environment.
- **Cost of training IT professionals totaling $113,400.** Initial training encompassed 15 hours for the customer's Level 1 and Level 2 employees.

The interview and financial analysis found that this customer organization experiences benefits of $5,403,332 over three years versus costs of $2,864,284, adding up to a net present value (NPV) of $2,539,048 and an ROI of 89%.

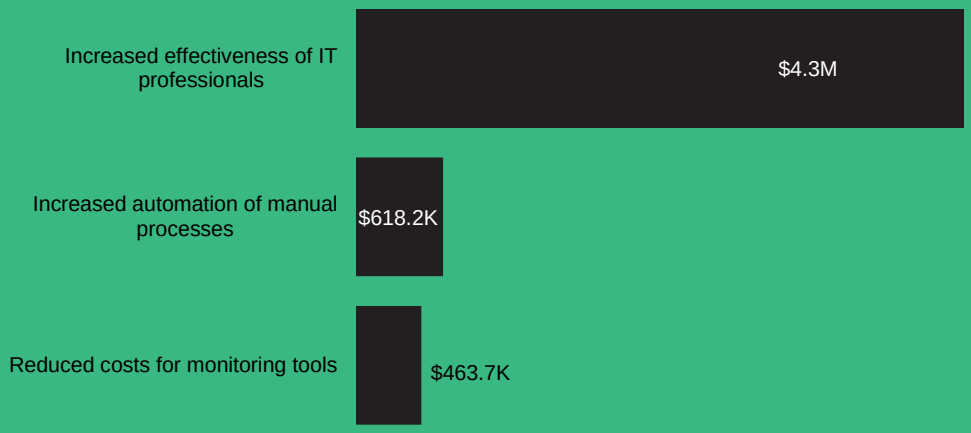
ROI
89%

BENEFITS PV
$5.40M

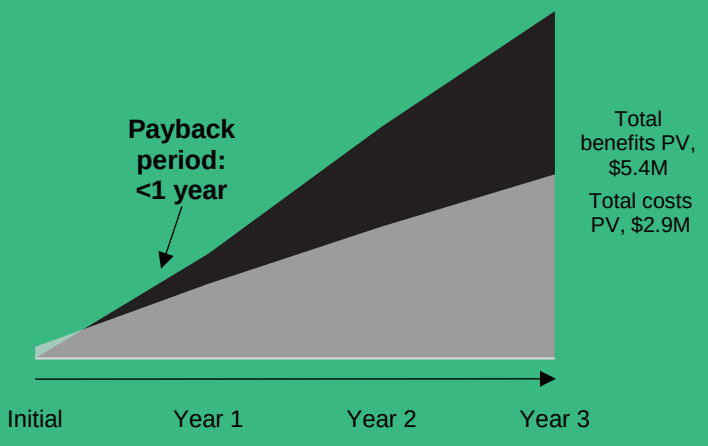
NPV
$2.54M

PAYBACK
<1 year

Benefits (Three-Year)



Financial Summary



Unquantified Benefits

Improved uptime resulting in enhanced customer experience and brand reputation, as well as additional revenue.

Consolidated software licensing fees from third-party monitoring tools.

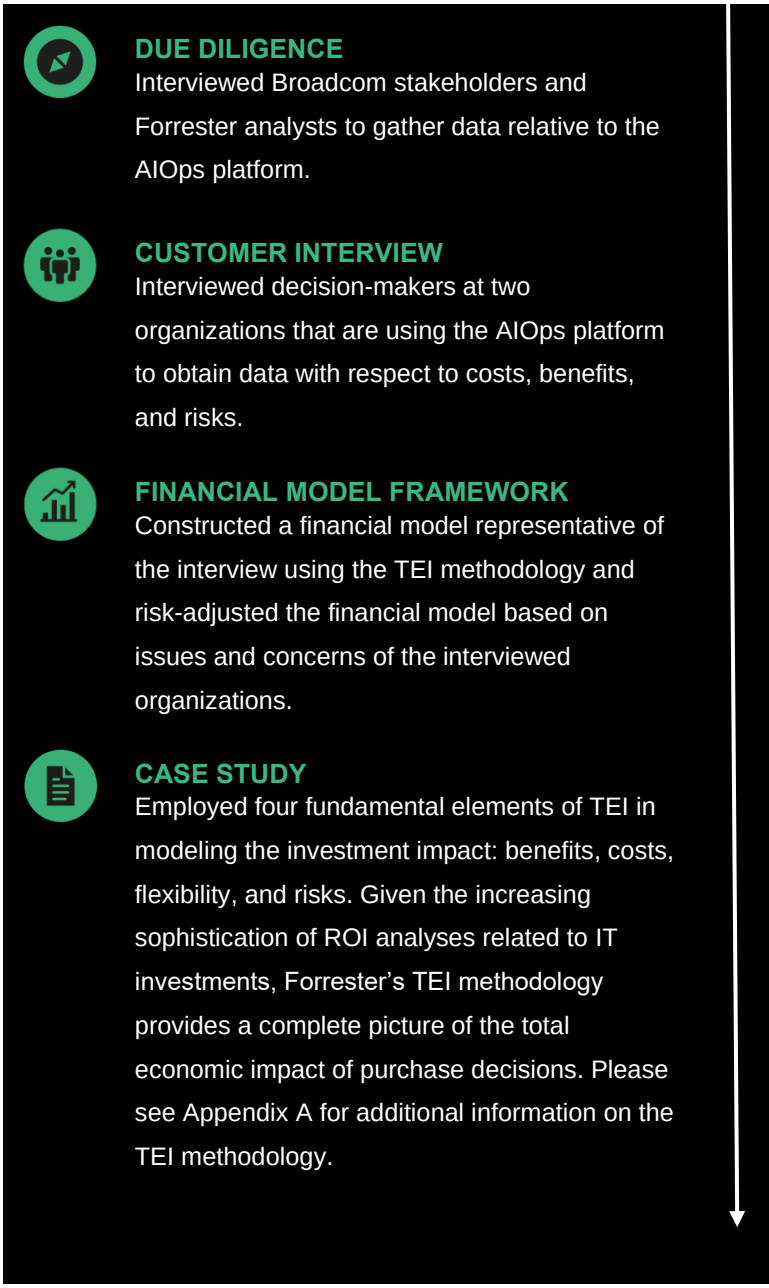
Enhanced professional development for operations teams.

Increased confidence in performance measurements across the IT stack.

TEI FRAMEWORK AND METHODOLOGY

From the information provided in the interviews, Forrester constructed a Total Economic Impact™ framework for those organizations considering an investment in the AIOps.

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 the AIOps can have on an organization.



The AIOps From Broadcom Customer Journey

Drivers leading to the AIOps investment

INTERVIEWED ORGANIZATION

Forrester interviewed an AIOps from Broadcom customer organization with the following characteristics:

- Industry: business services.
- Interviewee title: chief architect of infrastructure.
- Revenue: $14.6 billion.
- Total employees: 55,000.
- Deployment: hybrid cloud, mostly on-premises, with 38 servers, 138 virtual servers, and multiple data centers.
- Performance monitoring tools: 51 tools across the mainframe, network, voice management systems, database, and applications.

Forrester also interviewed a second customer to obtain additional qualitative inputs. This interviewee was the IT enterprise architect for a semiconductors and infrastructure software enterprise with revenues of $22.6 billion. This interviewee relied primarily on AIOps from Broadcom for monitoring its entire IT landscape.

KEY CHALLENGES

Prior to implementing the AIOps from Broadcom platform, the customer organization was utilizing multiple monitoring tools and relying heavily on open-source software to run periodic checks on critical parameters of application, network, and server resources. This open-source software was complex, difficult to maintain, and required expertise that was expensive to hire.

The customer organization struggled with common challenges, including:

- **Limited view of the environment's individual elements.** The customer organization's monitoring tools for compute and network were not able to cover the whole organization. With incomplete data on performance coming into IT operations, it was difficult to analyze the causes of system slowdowns or failures.
- **Difficulty achieving an end-to-end view.** Without an overall monitoring tool that could analyze data from systems that were tracked by other performance management tools, it was difficult to obtain a view from mobile to mainframe. The chief architect of infrastructure for the business services firm said: "We had all the technologies to give us visibility end-to-end, but we were looking at five different platforms and when it came time to work on a critical situation, you had to log into five different tools. It was ridiculous."

> **"Every performance management tool that gets added to the system needs at least two people just for lifecycle support and doing the software updates. It is ridiculous. And then, you need two practitioners who know how to use the tool, and that's where things really start to fall apart."**
>
> *Chief architect of infrastructure, business services*

- **Lack of transparency across the application and infrastructure environment.** Incident identification was needlessly delayed because each team was focusing on their own siloed monitoring tool. Problems would pass from one

team to another without resolution. The IT enterprise architect for the semiconductors and infrastructure software organization said: “When I got a server problem, the Windows team gets into the server monitoring tool and says that the server is working fine, we don’t have any problem. Then it would bounce to the storage team, and the storage team would bounce it to somebody else.”

SOLUTION REQUIREMENTS/INVESTMENT OBJECTIVES

The customer organization searched for a solution that could:

- Provide greater transparency across the entire IT stack to help break down infrastructure and applications silos.
- Reduce alert noise.
- Provide automation to minimize the need for manual intervention to identify and remediate incidents.
- Establish a vendor-neutral data lake that leverages AI and ML to analyze the root cause of problems and predict future issues.

Key deployment details:

- **Hybrid cloud environment**
- **Large on-premises component**
- **80,000 devices**
- **75 IT Level 1 workers**

USE CASE DESCRIPTION

To meet rising customer expectations in a business that is increasingly dependent on digital experiences, the customer needed an intelligent monitoring technology that could provide a unified view of all components of a service, from application code to infrastructure. It was also important to leverage AI and ML to gain a deeper understanding on where to focus operational activities that would improve business performance. For this use case, Forrester has modeled benefits and costs over three years.

Analysis Of Benefits

Quantified benefit data

Total Benefits

Ref.	Benefit	Year 1	Year 2	Year 3	Total	Present Value
Atr	Increased effectiveness of IT professionals	$1,434,375	$1,912,500	$1,912,500	$5,259,375	$4,321,445
Btr	Increased automation of manual processes	$205,200	$273,600	$273,600	$752,400	$618,221
Ctr	Reduced costs for monitoring tools	$153,900	$205,200	$205,200	$564,300	$463,666
	Total benefits (risk-adjusted)	$1,793,475	$2,391,300	$2,391,300	$6,576,075	$5,403,332

INCREASED EFFECTIVENESS OF IT PROFESSIONALS

Evidence and data. The customer organization found that the after implementing AIOps, there was a significant increase in cross-team collaboration and digital experience monitoring. Mundane operational monitoring tasks were replaced by higher value assignments. The IT enterprise architect estimated that his team would have required four times as many workers to accomplish the same scope of work under his prior environment.

Modeling and assumptions. Based on the customer interviews, Forrester assumes:

- The customer organization effectively avoids the cost of hiring 18 additional professionals.
- The fully loaded annual salary for an IT professional is $125,000.
- It takes three months to realize value from the solution.

> **"Our scope now includes mobile-to-mainframe monitoring, [which is] a transparent platform accessible across all production teams that provides a better view of environment health/alarms/issues, etc., and as a result, correlations can be done much more effectively."**
>
> *IT enterprise architect, semiconductors and infrastructure software*

> **"The team eliminated bouncing issues/problems between IT silos. AIOps eliminates 90% of incidents that needed to be reassigned to specific operations teams."**
>
> *IT enterprise architect, semiconductors and infrastructure software*

Risks. The primary risk to realizing this benefit is the IT maturity level of the customer organization. Operations teams that already are leveraging a solution with AI and ML to analyze performance will not experience as large an increase in their scope of work.

To account for these risks, Forrester adjusted this benefit downward by 15%, yielding a three-year, risk-adjusted total PV (discounted at 10%) of $4.3 million.

Increased Effectiveness Of IT Professionals					
Ref.	**Metric**	**Calculation**	**Year 1**	**Year 2**	**Year 3**
A1	IT and development headcount required under prior environment	Interview	24	24	24
A2	IT headcount required for AIOps environment	Interview	6	6	6
A3	Headcount savings with AIOps	A1-A2	18	18	18
A4	Yearly rate per IT professional	Assumption	$125,000	$125,000	$125,000
A5	Percent of year AIOps is operating at scale	Assumption	75%	100%	100%
At	Increased effectiveness of IT professionals	A3*A4*A5	$1,687,500	$2,250,000	$2,250,000
	Risk adjustment	↓15%			
Atr	Increased effectiveness of IT professionals (risk-adjusted)		$1,434,375	$1,912,500	$1,912,500
	Three-year total: $5,259,375			**Three-year present value: $4,321,445**	

INCREASED AUTOMATION OF MANUAL PROCESSES

Evidence and data. The complexity of IT systems has been exponentially increasing for the past several years. The customer organization struggled to keep up with the demand for professionals possessing the required modernized skill set. AIOps from Broadcom helps the customer close this gap by automating manual processes.

The chief architect of infrastructure for the business services organization said: “Our organization is very aggressive about hiring kids straight out of college and putting them through a training course to make them into developers and administrators. The bottom line is automation helps that. It helps us take people with less experience, but still allow them to be productive. That lowers our overall cost of ownership and usage.”

The customer organization tracks the number of manual processes that are eliminated with AIOps from Broadcom. In their first quarterly sprint, 3,200 manual tasks were automated.

> **“The bottom line is it still comes down to eliminating manual intervention for tasks such as service restoration, patch/upgrade implementation, version increment deployment, etc. That is where we win, that is where the cost comes down.”**
>
> *Chief architect of infrastructure, business services*

Forrester models this benefit based upon the number of hours saved per automation.

Increased Automation Of Manual Processes					
Ref.	**Metric**	**Calculation**	**Year 1**	**Year 2**	**Year 3**
B1	Number of automations with AIOps per quarter	Interview	1,200	1,200	1,200
B2	Hourly rate per person	Composite	$60	$60	$60
B3	Number of hours saved per automation	Interview	2	2	2
B4	Percent of year AIOps is operating at scale	Interview	75%	100%	100%
B5	Percent captured	Assumption	50%	50%	50%
Bt	Increased automation of manual processes	B1*B2*B3*B4*B5*4	$216,000	$288,000	$288,000
	Risk adjustment	↓5%			
Btr	Increased automation of manual processes (risk-adjusted)		$205,200	$273,600	$273,600
Three-year total: $752,400			**Three-year present value: $618,221**		

Modeling and assumptions. Based on the customer interviews, Forrester assumes:

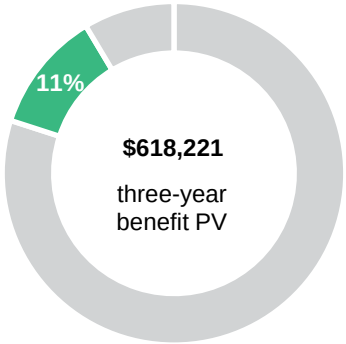
- The customer organization automates 1,200 tasks per quarter.
- Each automation saves 2 hours of labor.
- The fully loaded hourly rate for IT professionals is $60.
- The customer organization converts 50% of saved hours into productive activities.

Risks. The savings associated with automating manual processes will vary based on:

- The number of automated tasks.
- The hours saved per automation.
- The fully burdened hourly rate of the IT professionals.

To account for these risks, Forrester adjusted this benefit downward by 5%, yielding a three-year, risk-adjusted total PV of $618,221.

Increased automation of manual processes:
11% of total benefits



Reduced Costs For Monitoring Tools					
Ref.	**Metric**	**Calculation**	**Year 1**	**Year 2**	**Year 3**
C1	Number of Level 1 IT workers	Interview	75	75	75
C2	Hourly rate per person	Assumption	$60	$60	$60
C3	Number of hours saved per Level 1 IT worker	8 hours per month	96	96	96
C4	Percent of year AIOps is operating at scale	Interview	75%	100%	100%
C5	Percent captured	Assumption	50%	50%	50%
Ct	Reduced costs for monitoring tools	C1*C2*C3* C4*C5	$162,000	$216,000	$216,000
	Risk adjustment	↓5%			
Ctr	Reduced costs for monitoring tools (risk-adjusted)		$153,900	$205,200	$205,200
	Three-year total: $564,300			**Three-year present value: $463,666**	

REDUCED COSTS FOR MONITORING TOOLS

Evidence and data. Every time organizations add a monitoring tool to close the gap for infrastructure or application teams, additional resources are required to support the tool. The interviewed customers leveraged AIOps from Broadcom to avoid adding new tools and to consolidate the existing number of performance monitoring tools running in their environment.

The IT enterprise architect for the semiconductors and infrastructure software organization said: “We acquired a firm that had 52 different monitoring tools with 115 instances in total for their product landscape. Now we are completely getting rid of them and replacing it with AIOps in a single platform.”

Forrester models this benefit based upon the number of Level 1 professionals who are supporting monitoring tools and estimating the hours saved by consolidating the performance monitoring tool set.

Modeling and assumptions. Based on the customer interviews, Forrester assumes:

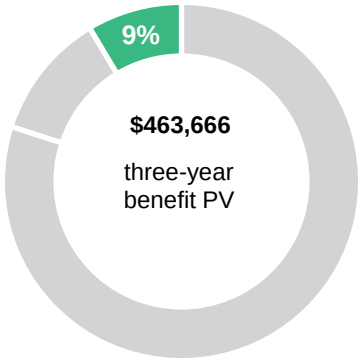
- There are 75 Level 1 workers involved in the maintenance of performance monitoring tools.
- Consolidation of monitoring tools saves Level 1 workers 8 hours per month.
- The fully loaded hourly rate for IT professionals is $60.
- The organization converts 50% of saved hours into productive activities.

Risks. The savings associated with reducing the costs for monitoring tools will vary based on:

- The number of performance operating tools in the prior environment.
- The hours saved per worker providing monitoring tool support.
- The fully burdened hourly rate of the IT professionals.

To account for these risks, Forrester adjusted this benefit downward by 5%, yielding a three-year, risk-adjusted total PV of $464,000.

Reduced costs for monitoring tools: 9% of total benefits



UNQUANTIFIED BENEFITS

Additional benefits that the customer experienced but was not able to quantify include:

- **Improved uptime resulting in enhanced customer experience and brand reputation, as well as additional revenue.** Interviewees reported that the additional compute, network, and application uptime was critical to enhance digital customer experiences. One hour of downtime in a key application or network could cost an organization between $10,000 to $20,000 per hour. AIOps provided both visibility across the entire IT landscape and a single platform to run data analytics. The AI and ML components of AIOps accelerated the process of identifying the root cause of problems and the time it takes to remediate the incident.
- **Consolidated software licensing fees from third-party monitoring tools.** AIOps from Broadcom gives customers the option to retain existing monitoring tools or to replace them with its comprehensive platform. Either way customers benefit from the AI and ML components of the platform. For those that choose to consolidate their software footprint, the savings can be significant. The interviewees for this study were able to consolidate some of their monitoring tools, but they did not have a record of the licensing fees under the prior environment.
- **Enhanced professional development for operations teams.** The customers reported that AIOps helped to reduce many of the monotonous, low-skill tasks that operators were performing across the IT stack. As a result, ITOM professionals focused their attention on more complex, higher value assignments where AI and human intelligence can work together. This contributed to improved employee experience and raised employee retention.

> **"AIOps [from Broadcom] gives us a way to get people to think about analytics and get them away from thinking about alerts. I want people to be doing good engineering and then eliminating problems or weaknesses in the environment, as opposed to responding to alerts where the only response you can do is reboot."**
>
> *Chief architect of infrastructure, business services*

Increased confidence in performance measurements across the IT stack. The customer used AIOps from Broadcom to develop a dashboard that could meet the needs of high-level executives and with a few clicks could quickly address the needs of engineers. Now that performance metrics were visible across infrastructure, applications, and network teams, it was easier to observe when there was a problem in two or three places and correlate the metrics from these systems in real time. This increased confidence in the IT infrastructure and applications teams and helped to eliminate finger-pointing and expedite incident remediation.

FLEXIBILITY

The value of flexibility is unique to each customer. There are multiple scenarios in which a customer might implement AIOps and later realize additional uses and business opportunities, including:

- **Scale the platform as needed.** Both interviewees operate enterprises that have a large infrastructure footprint. And they rely upon the solution to work at the scale necessary for a dynamic IT landscape.

> **"We recently integrated an acquisition with an IT landscape that utilized 52 monitoring tools with a total of 115 instances. AIOps enabled us to completely get rid of them and replace their tools with a single platform."**
>
> *IT enterprise architect, semiconductors and infrastructure software*

Accommodate data from new third-party monitoring tools. The customers relied upon AIOps to collect data from many disparate sources. Its deep understanding of hundreds of technology solutions provides the flexibility needed to keep pace with new monitoring solutions.

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

Analysis Of Costs

Quantified cost data

Total Costs							
Ref.	**Cost**	**Initial**	**Year 1**	**Year 2**	**Year 3**	**Total**	**Present Value**
Dtr	Software license fees	$0	$1,050,000	$1,050,000	$1,050,000	$3,150,000	$2,611,195
Etr	Planning and implementation costs	$67,620	$0	$0	$0	$67,620	$67,620
Ftr	Infrastructure costs	$0	$28,980	$28,980	$28,980	$86,940	$72,069
Gtr	Training fees	$113,400	$0	$0	$0	$113,400	$113,400
	Total costs (risk-adjusted)	$181,020	$1,078,980	$1,078,980	$1,078,980	$3,417,960	$2,864,284

SOFTWARE LICENSE FEES

Evidence and data. Currently, AIOps from Broadcom license fees depend on the number and type of data sources or devices utilized by the platform. For pricing purposes, devices are calculated with different weights depending on the number of VM/OS instances, java virtual machines, microservices, and third-party data sources.

Modeling and assumptions. Forrester estimates for the customer organization to include:

- The number of devices feeding data into AIOps totals 80,000.
- The average license fee per device based upon the data sources is $12.50.

Risks. The cost of licensing fees will vary with:

- The number of business-critical devices supplying data to AIOps.
- The composition of the IT infrastructure and application environment.

To account for these risks, Forrester adjusted this cost upward by 5%, yielding a three-year, risk-adjusted total PV (discounted at 10%) of $2.6 million.

Software License Fees						
Ref.	**Metric**	**Calculation**	**Initial**	**Year 1**	**Year 2**	**Year 3**
D1	License fee per device			$12.50	$12.50	$12.50
D2	Number of devices			80,000	80,000	80,000
Dt	Software license fees	D1*D2	$0	$1,000,000	$1,000,000	$1,000,000
	Risk adjustment	↑5%				
Dtr	Software license fees (risk-adjusted)		$0	$1,050,000	$1,050,000	$1,050,000
	Three-year total: $3,150,000			**Three-year present value: $2,611,195**		

PLANNING AND IMPLEMENTATION COSTS

Evidence and data. The customer reported a relatively straightforward implementation process with time-to-deployment being dependent on a number of factors, most notably the organization's data integration requirements and landing zone configuration.

> **"The work was making sure the team had a monitoring configuration that was tuned and gave them good visibility for what they wanted to do."**
>
> *Chief architect of infrastructure, business services]*

Modeling and assumptions. Forrester estimates for the customer organization to include:

- A full working week of 40 hours to implement the solution.
- Six IT professionals work on the planning and implementation.
- A fully burdened hourly rate for these IT professionals of $60.
- A $50,000 professional services contract to facilitate the deployment.

Risks. The planning and implementation costs will vary with:

- The number of IT professionals needed to implement the solution.
- The share of time required for each professional for implementation.
- The fully burdened hourly rate of pay for these IT professionals.

To account for these risks, Forrester adjusted this cost upward by 5%, yielding a three-year, risk-adjusted total PV of $67,620.

Planning And Implementation Costs						
Ref.	**Metric**	**Calculation**	**Initial**	**Year 1**	**Year 2**	**Year 3**
E1	Number of IT administrators	Interview	6			
E2	Hourly rate per person	Assumption	$60			
E3	Hours	Interview	40			
E4	Professional services	Interview	$50,000			
Et	Planning and implementation costs	(E1*E2*E3)+ E4	$64,400	$0	$0	$0
	Risk adjustment	↑5%				
Etr	Planning and implementation costs (risk-adjusted)		$67,620	$0	$0	$0
	Three-year total: $67,620			**Three-year present value: $67,620**		

INFRASTRUCTURE COSTS

Evidence and data. The customers also reported incurring ongoing costs related to their utilization of the infrastructure as well as its ongoing maintenance and support requirements. These ongoing costs are based upon the hybrid cloud configuration.

Modeling and assumptions. Forrester estimates for the customer organization to include:

- Seventy collectors for on-premises infrastructure.
- One thousand cloud-based devices.
- The fee per collector is $30 and the cost for cloud-based devices is $0.20 per month.

Risks. The infrastructure costs will vary with:

- The number of units and mix of on-premises collectors and cloud-based devices.

To account for these risks, Forrester adjusted this cost upward by 5%, yielding a three-year, risk-adjusted total PV of $72,069.

Infrastructure Costs						
Ref.	**Metric**	**Calculation**	**Initial**	**Year 1**	**Year 2**	**Year 3**
F1	Number of collectors	Assumption		70	70	70
F2	Infrastructure costs per collector per month	Assumption		$30	$30	$30
F3	Number of cloud devices	Assumption		1,000	1,000	1,000
F4	Call costs from cloud providers per device per month	Assumption		$0.20	$0.20	$0.20
Ft	Infrastructure costs	((F1*F2)+ (F3*F4))*12	$0	$27,600	$27,600	$27,600
	Risk adjustment	↑5%				
Ftr	Infrastructure costs (risk-adjusted)		$0	$28,980	$28,980	$28,980
	Three-year total: $86,940			**Three-year present value: $72,069**		

TRAINING FEES

Evidence and data. Customers reported training costs related to the time cost of training Level 1 and Level 2 IT operations professionals. The training played an important role in knowledge transfer and getting the team up to speed quickly.

Modeling and assumptions. Forrester estimates for the customer organization to include:

- One-hundred and twenty Level 1 and Level 2 IT professionals.

  Fifteen hours of mandatory training.
- A fully burdened hourly rate for these IT professionals of $60.

Risks. The training fees will vary with:

- The amount of training required and the number of attendees at training.
- The fully burdened hourly rate of training attendees.

To account for these risks, Forrester adjusted this cost upward by 5%, yielding a three-year, risk-adjusted total PV of $113,400.

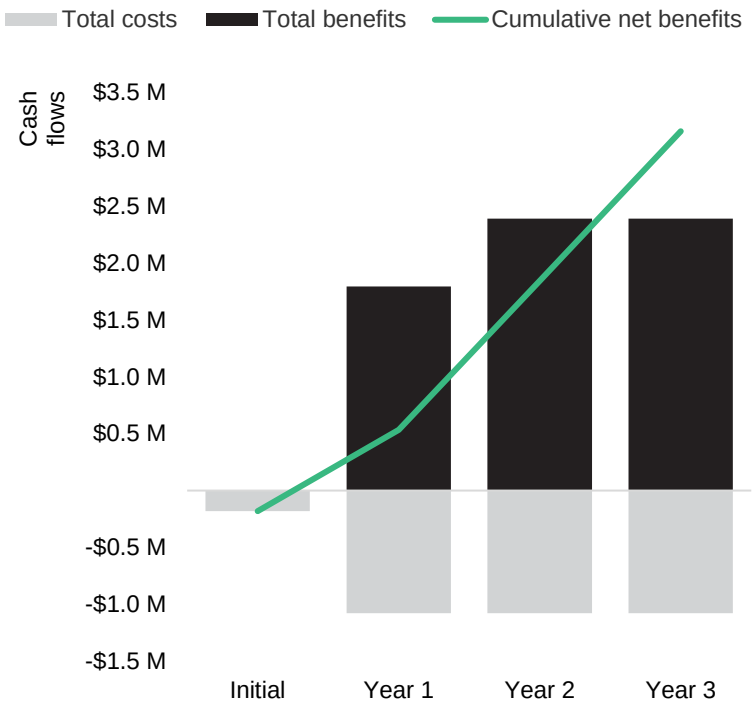
Training Fees

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3
G1	Number of level 1 & level 2 IT workers		120			
G2	Hourly rate per person		$60			
G3	Hours		15			
Gt	Training fees	G1*G2*G3	$108,000	$0	$0	$0
	Risk adjustment	↑5%				
Gtr	Training fees (risk-adjusted)		$113,400	$0	$0	$0
	Three-year total: $113,400			**Three-year present value: $113,400**		

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 Analysis (Risk-Adjusted Estimates)

	Initial	Year 1	Year 2	Year 3	Total	Present Value
Total costs	($181,020)	($1,078,980)	($1,078,980)	($1,078,980)	($3,417,960)	($2,864,284)
Total benefits	$0	$1,793,475	$2,391,300	$2,391,300	$6,576,075	$5,403,332
Net benefits	($181,020)	$714,495	$1,312,320	$1,312,320	$3,158,115	$2,539,048
ROI						89%
Payback						<1 year

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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