

A Forrester Total Economic Impact™
Study Commissioned By Sumo Logic
February 2018

The Total Economic Impact™ Of Sumo Logic

Cost Savings And Business Benefits
Enabled By Sumo Logic

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Executive Summary

Sumo Logic is a machine data (log, metrics, events) analytics suite that enables customers to monitor, troubleshoot, and resolve their cloud or hybrid environments for operations issues and security threats in real time. Sumo Logic commissioned Forrester Consulting to conduct a Total Economic Impact™ (TEI) study and examine the potential return on investment (ROI) enterprises may realize by deploying their solution. The study's purpose is to provide readers with a framework to evaluate the potential financial impact of Sumo Logic's solution on their organizations.

To better understand the benefits, costs, and risks associated with this investment, Forrester interviewed four customers with years of experience using Sumo Logic for operations and security use cases. These customers provide a wide range of B2B and B2C services and are housed using either cloud or hybrid architecture. Interviewed customers implemented Sumo Logic within application development, testing, and production environments. They used Sumo Logic for a variety of tasks: identifying operations issues and security threats, conducting root-cause analysis, automating issue response, gaining visibility into system health, and even discovering business insights about tools and users. Customers achieved fast time-to-value due to Sumo Logic's cloud-native software-as-a-service (SaaS) solution.

Prior to using Sumo Logic, customers often used other monitoring tools that did not include log and machine data aggregation and analytics. Logs were a black box, leaving the enterprises blind to a significant percentage of application issues and security threats. When issues were identified, they were time-consuming to repair as the DevOps/SecOps teams would have to individually access each system or application to review the logs. These organizations previously attempted other approaches to conduct log analysis, most by building an on-premises instance of an open source tool. Those tools, however, were cumbersome, lacked critical features, broke often, and ultimately could not scale to match business needs.

Quantified And Unquantified Benefits Of Sumo Logic

IMPACT	COST AVOIDANCE	BUSINESS GROWTH
DevOps <i>Monitoring & troubleshooting</i>	<ul style="list-style-type: none"> › Reduce manual work to identify and repair issues in development, test, and production environments › Reduce customer support and maintenance costs › Reduce lost employee productivity due to downtime › Eliminate legacy solutions 	<ul style="list-style-type: none"> › Deliver better user and customer experience, improve retention, & increase incremental revenue by reducing the impact of issues › Design new/better products with user and tool analytics › Embrace microservices and containerization to increase business agility and speed
SecOps <i>Security & compliance</i>	<ul style="list-style-type: none"> › Reduce manual work to identify and resolve security threats › Reduce manual effort during security audits › Reduce risk of breaches 	<ul style="list-style-type: none"> › Increase B2B sales by achieving and defending security certifications, such as PCI and ISO 27001

Key Benefits



Reduced labor to resolve operations and security issues:
\$3.2 million



Profits and productivity achieved with increased availability:
\$1.8 million



Reduced hours of vulnerability to security threats:
81%



ROI
171%



Benefits PV
\$6.4 million

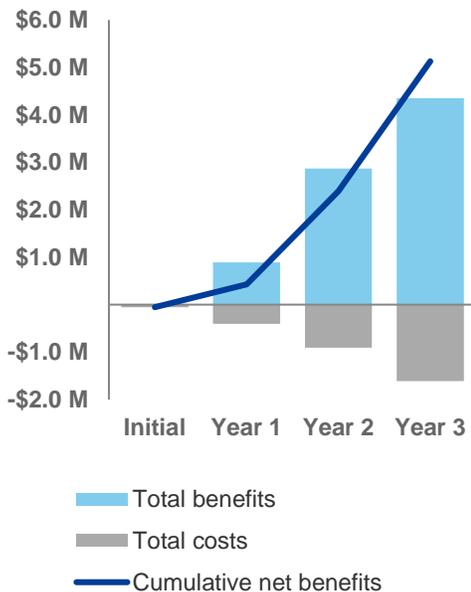


NPV
\$4.1 million



Payback
<6 months

**Financial Analysis
(Three-Year)**



Key Findings

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

- › **The organization slashed mean-time-to-identify and -repair issues, enabling it to recapture DevOps member productivity of \$1,412,996 for minor issues and \$1,148,629 for critical issues.** Savings increased as Sumo Logic was extended across the application portfolio. With Sumo Logic, 10% of minor issues were automatically identified and resolved, and the other 90% of issues were repaired in only 5 minutes. Critical issues that previously required 4 hours could be repaired in only 30 minutes by a six-person team.
- › **Increased application availability protected gross profits of \$817,236 for customer-facing applications.** Less down time reduced the likelihood of customers turning to competitors or cancelling orders.
- › **Increased availability for critical, internal applications improved employee productivity by \$936,054.** Employees faced fewer downtime incidents that would have prevented them from doing their jobs.
- › **Faster issue resolution reduced negative customer experiences, which led to a 12% decrease in customer support inquiries; this saved the organization \$829,181.** Issues were fixed before customers noticed, preventing them from reaching out to support representatives.
- › **SecOps teams identified and resolved security threats significantly faster, enabling the organization to recapture \$644,825 in productivity.** Automation using Sumo Logic resolved 25% of threats without manual intervention, saving 2 hours per threat, with mean-time-to-repair (MTTR) for the remainder slashed to only 30 minutes.
- › **Faster identification and resolution of security threats reduced vulnerability for breaches by 81%, avoiding \$313,255 in financial risk.** The Ponemon Institute identified the average breach cost as \$7.35M with a likelihood of 6% in 2017.¹ Reduced hours of vulnerability substantially reduced the expected cost of this breach risk.
- › **Streamlined auditing saved \$11,167 in SecOps member productivity.** Audit compliance could be conducted by fewer people in less time, and the strengthened organizational security posture enabled a 75% decrease in the number of annual internal audits.
- › **Avoidance of an alternative open source log aggregation solution reduced costs by \$333,796.** These systems were cumbersome and could not scale. By adopting Sumo Logic, the organization could eliminate hardware and reallocate a systems administrator previously dedicated to the legacy solution.

Unquantified benefits. The interviewed organizations experienced the following benefits, which are not quantified for this study:

- › **Improved user experience and product strategy from analyzing customer behavior and product performance with Sumo Logic.**
- › **Increased sales by demonstrating security strength via certifications, such as PCI and ISO 27001.**
- › **Reduced development costs and product maintenance by identifying and repairing issues during development and QA.**

“We identify issues so much sooner than we did before Sumo Logic. It’s ridiculous how much more powerful and responsive we are.”

*Sr. director of security,
supply chain technology*



“Without a log analytics solution like Sumo Logic, the mean-time-to-resolve issues would be exponentially longer.”

*VP of engineering,
cloud software*



“I can’t understate the quality of Sumo Logic’s product and services — it’s a true partnership.”

*Sr. director of security,
supply chain technology*



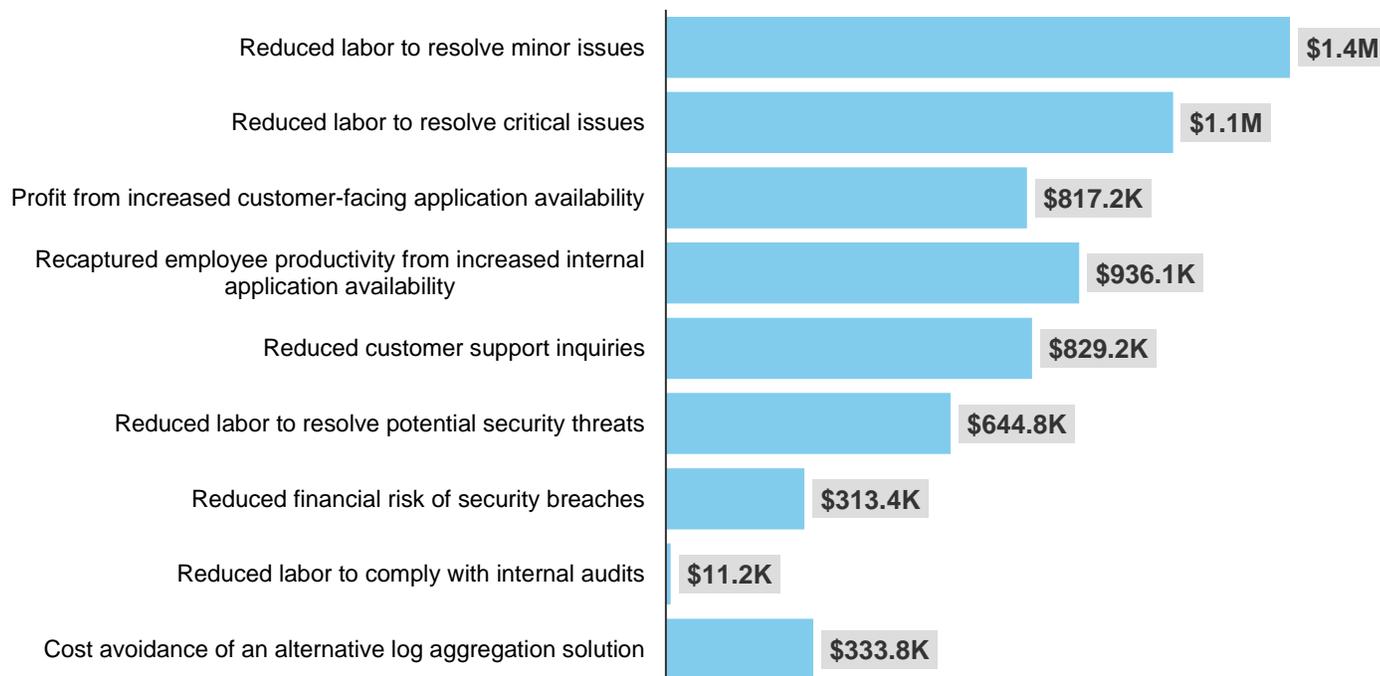
- › **Reduced number of critical incidents by identifying and repairing issues before they spun out of control and severely impacted users.**
- › **Allowed the organizations to implement microservices and containerized architectures.**
- › **Allowed for democratization of issue identification and resolution.**
- › **Improved systems visibility for executives and product teams.**

Costs. The interviewed organizations experienced the following risk-adjusted PV costs, represented by a composite organization:

- › **Sumo Logic costs of \$2,214,017.** This assumes a phased roll out of Sumo Logic with increasing daily log data ingest of 200 gigabytes, 500 gigabytes, and 1 terabyte in years 1 through 3. These costs also include professional services for implementation.
- › **Internal labor worth \$19,040 for proof of concept (PoC) and implementation.** Sumo Logic conducted a free initial PoC, which required 25% of six FTEs over one month. PoC deployment was instant and seamless, and Sumo Logic’s professional services ensured full implementation was simple and fast.
- › **Internal labor for user training worth \$108,492.** Users required 6 hours of initial training and 3 hours per year of continual learning.
- › **Internal labor for system administration worth \$41,175.** System administration included limited effort to liaise with Sumo Logic, resolve support tickets, and set up or update collectors for new data sources.

Forrester’s interviews with four existing customers and subsequent financial analysis found that the composite organization based on these interviewed organizations experienced benefits of \$6,447,239 over three years versus costs of \$2,382,724, adding up to a net present value (NPV) of \$4,064,515 and an ROI of 171%.

Benefits (Three-Year)



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

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 Sumo Logic.

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 Sumo Logic can have on an organization:



DUE DILIGENCE

Interviewed Sumo Logic stakeholders and Forrester analysts to gather data relative to Sumo Logic.



CUSTOMER INTERVIEWS

Interviewed four organizations using Sumo Logic 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 Sumo Logic'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.

DISCLOSURES

Readers should be aware of the following:

This study is commissioned by Sumo Logic 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 Sumo Logic.

Sumo Logic 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.

Sumo Logic provided the customer names for the interviews but did not participate in the interviews.

The Sumo Logic Customer Journey

BEFORE AND AFTER THE SUMO LOGIC INVESTMENT

Interviewed Organizations

For this study, Forrester conducted four interviews with Sumo Logic customers. Interviewed customers include the following:

INDUSTRY	INTERVIEWEE	INFRASTRUCTURE	DAILY LOG INGEST	SUMO LOGIC DEPLOYMENT
Call center technology	Sr. DevOps engineer	100% cloud 100 to 200 microservices	1.5 to 2 terabytes	Deployed on all applications for development, testing, and operations.
Publisher/eCommerce	Site reliability manager	90% cloud 10% legacy on-premises 150 applications 50 microservices	150 to 200 gigabytes	Deployed on critical customer-facing applications for development, operations, and security use cases. Currently expanding systemwide.
Cloud software	VP of engineering	100% cloud 8 applications 25 to 50 microservices	100 to 150 gigabytes	Deployed on all applications for development, operations, and security use cases.
Supply chain technology	Sr. director of security	60% cloud 40% on-premises 5 applications	500 gigabytes	Deployed on all applications for development, operations, and security use cases.

Key Challenges

The interviewed organizations identified several key challenges that led them to search for a log aggregation tool like Sumo Logic:

- › Open source and/or homegrown log aggregation solutions had very limited functionality. These systems required constant maintenance, and it was very difficult and time-consuming to collect log data from a new source. As a result, system administration was expensive and required constant attention.
- › Open source and/or homegrown log aggregation solutions had rigid data storage capabilities and could not easily scale alongside the organizations' cloud infrastructure. It was expensive, if not impossible, to invest in the necessary hardware to support application growth.
- › Root-cause analysis was extremely time-intensive, with DevOps and SecOps teams logging into each individual instance to review logs.
- › Many operations issues, such as downtime, degraded performance, and bugs, went unidentified, leading to lost customer profits, wasted employee productivity, and high customer support costs. Even when an issue was identified, it was difficult to detect the "bad actor" process to find the appropriate solution.
- › Many security threats were undetected, creating significant organizational vulnerability to data breaches. Even when detected, it was challenging to identify the true impact of a security breach such as a phishing attack without being able to analyze system logs to see exactly which users were affected and when.

"With well over a decade of consistent business growth, we couldn't continue on a platform that would hold us back. We needed something agile to get us where we need to go for our future."

*Sr. director of security,
supply chain technology*



"We experience higher volumes in November and December than other periods, and Sumo Logic has been great about helping build a contract model that is right for us."

*Sr. director of security,
supply chain technology*



Requirements And Deployment

The interviewed organizations searched for a solution that could:

- › Integrate with cloud and on-premises environments, with the ease of setup and instant scalability of a SaaS tool. Sumo Logic's cloud-native, SaaS approach was desirable for fast adoption and time-to-value.
- › Reduce the mean-time-to-identify (MTTI) operations issues and decrease the number of undetected issues. Organizations identified automatic alerts, system dashboards, and trend analysis as key tools.
- › Reduce the MTTR operations performance issues and bugs with root-cause analysis, queries, dashboards, and collaboration tools to improve productivity and effectiveness. By resolving issues faster, interviewees hoped to improve availability to enable better product outcomes and reduce customer support costs.
- › Reduce the MTTI and resolve potential security threats and catch previously undetected threats, in order to improve SecOps member productivity and ultimately reduce vulnerability to data breaches.
- › Help enforce and demonstrate security and auditing requirement compliance such as the Payment Card Industry (PCI) Data Security Standard and International Organization for Standardization (ISO) 27001.
- › Offer flexible pricing to accommodate the unique peaks in resources demanded by their applications and business.

All interviewees chose to take a phased approach to deployment:

- › All four customers first used Sumo Logic to monitor operations issues and performance in the production environments of their mission-critical applications.
- › In as little as three months, these customers began to deploy Sumo Logic for additional applications. As of the time of this report, three out of four monitored their entire environment using Sumo Logic, and the fourth customer is at 50% but actively working toward the full system.
- › After six to 18 months, all customers extended Sumo Logic to the development, testing, performance, and staging environments for those same applications.
- › Three out of the four interviewed customers rolled out Sumo Logic for security monitoring after approximately nine to 18 months.

Key Results

The interviews revealed the following key results from the Sumo Logic investment:

- › Visibility to performance issues, bugs, and security threats strengthened DevOps collaboration and empowered product groups.
- › DevOps/SecOps teams reduced MTTR by leveraging alerts, dashboards, and powerful root-cause analysis — recapturing significant productivity for business value.
- › Improved application availability led to reduced customer support costs, increased sales, and improved end user productivity.
- › Reduced exposure to security threats via faster MTTI/MTTR.

“We initially rolled out Sumo Logic to production, then added it to our development environment one year later.”

*VP of engineering,
cloud software*



“We brought Sumo Logic in purely for operations, but we immediately became curious about using it from a security perspective.”

*Sr. director of security,
supply chain technology*



“Our office looks like a control center, surrounded by TVs displaying Sumo Logic dashboards. This is core to the daily operational procedure we use to identify issues the moment they happen.”

*Sr. director of security,
supply chain technology*



“Sumo Logic offers many features we wouldn't have if we tried to build something in-house, because we wouldn't ever have enough time or money to build it.”

*Sr. DevOps engineer,
call center technology*



Composite Organization

Based on the interviews, 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 four 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 organization is a global enterprise with 2,000 employees and \$500 million in revenue. The organization services B2C customers.
- › Approximately 400 employees sit in the product, operations, and security teams for the composite organization. The remaining 1,600 employees encompass large teams that handle order fulfillment, warehousing, shipping, customer support, sales, and more.
- › The organization manages 100 applications, 40 of which are customer-facing. Ten of the other 60 internal applications are critical. Product teams primarily manage all aspects of their applications.
- › Small security and DevOps teams sit across the organization with the purpose of training and enforcing best practices among product teams and can step in to aid in issue resolution as needed.
- › The organization's data infrastructure is hosted entirely in market-leading cloud providers. The organization is looking toward containerization and microservices but has only rolled out these initiatives in pockets.

Deployment characteristics:

- › The organization initially rolled out Sumo Logic to the production environments of 20 mission-critical, customer-facing applications for operations monitoring and analysis, with a log ingest of 200 gigabytes per day.
- › In Year 2, the organization rolled out Sumo Logic to the other 20 customer-facing applications along with 10 mission-critical internal applications. Sumo Logic was also deployed to the security team and added to development and testing environments. This growth resulted in an increased log ingest of 500 gigabytes per day.
- › In Year 3, the organization rolled out Sumo Logic to the remainder of the environment — totaling 100 monitored applications and 1 terabyte of logs ingested daily.

What defines an application?

- › Applications vary dramatically in size and purpose. Some organizations may leverage hundreds of microservices, while others may have several large applications or one monolithic application.
- › For this analysis, an “application” sits in the middle of this range, representing a small number of microservices (five to 20) or one of several key sub-applications for a major, monolithic application.
- › Readers should consider their own internal application architecture and scale their own numbers accordingly to understand how this composite organization compares to their own environment.



Composite Organization:
B2C enterprise
\$500M in revenue
2,000 employees
100% cloud environment
40 customer-facing apps
10 critical internal apps
50 noncritical internal apps



Deployment:
Operations, development, and security use cases for 20 apps in Year 1, 50 apps in Year 2, and 100 apps in Year 3, reaching 1 terabyte in daily log ingest

Financial Analysis

QUANTIFIED BENEFIT AND COST DATA AS APPLIED TO THE COMPOSITE

Total Benefits

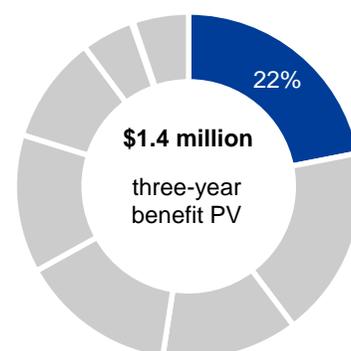
REF.	BENEFIT	YEAR 1	YEAR 2	YEAR 3	TOTAL	PRESENT VALUE
Atr	Reduced labor to resolve minor issues	\$201,215	\$518,103	\$1,067,315	\$1,786,632	\$1,412,996
Btr	Reduced labor to resolve critical issues	\$163,568	\$421,168	\$867,623	\$1,452,359	\$1,148,629
Ctr	Profit from increased customer-facing application availability	\$179,790	\$395,550	\$435,090	\$1,010,430	\$817,236
Dtr	Recaptured employee productivity from increased internal application availability	\$0	\$584,955	\$602,438	\$1,187,393	\$936,054
Etr	Reduced customer support inquiries	\$204,000	\$408,000	\$408,000	\$1,020,000	\$829,181
Ftr	Reduced labor to resolve potential security threats	\$0	\$271,620	\$559,480	\$831,100	\$644,825
Gtr	Reduced financial risk of security breaches	\$0	\$135,608	\$267,908	\$403,515	\$313,355
Htr	Reduced labor to comply with internal audits	\$3,310	\$4,613	\$5,784	\$13,707	\$11,167
Itr	Cost avoidance of an alternative log aggregation solution	\$136,000	\$131,325	\$135,265	\$402,590	\$333,796
	Total benefits (risk-adjusted)	\$887,883	\$2,870,941	\$4,348,901	\$8,107,726	\$6,447,239

Reduced Labor To Resolve Minor Issues

Application performance issues and bugs are common problems that negatively impact customer experience, causing users to reach out to support or turn to a competitor. Identifying and resolving these issues can be a significant labor cost, so a reduction in the average response time can result in significant productivity savings across an organization. The interviewed customers for this study reported that Sumo Logic resulted in recaptured productivity by automating responses for certain issues and reducing the time to repair those issues that remained.

- › The site reliability manager for a publisher/eCommerce company shared, “There are certain things specific to logs that are not caught by any other tools.” Sumo Logic enabled customers to improve MTTR for all issues, but the savings were most pronounced for such issues that required the analysis of logs for identification and problem resolution.
- › Another interviewee described: “[Our cloud provider] throttles at the account level, so if we have one bad-acting service, it affects other services making similar calls and can cause outages. We use Sumo Logic to analyze cloud trail events for all our API calls to find when [the provider] is throttling our applications and identify the specific service that is burdening the network.”
- › A supply chain technology company valued Sumo Logic’s dashboards: “Our office looks like a control center, surrounded by TVs displaying Sumo Logic dashboards. This is core to the daily operational procedure we use to identify issues the moment they happen.”

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 \$6.4 million.



Reduced labor to resolve minor issues: 22% of total benefits

- › Sumo Logic’s monitoring proved especially important for certain applications, as one customer shared: “We had a tool that was the most important piece of software in our stack, that was old, written poorly, and completely unmonitored. Since it was so critical, our developers didn’t want to make changes to it. But by taking these logs and pushing them into Sumo Logic, we were able to create dashboards that showed what was actually happening in the application, which was a huge help whenever there were issues.”

Forrester took the following approach to model the financial impact of this benefit for Sumo Logic customers:

- › Forrester estimated an average of two minor issues per day, per application, based on frequencies reported by Sumo Logic customers.
- › The MTTR before Sumo Logic was measured in two categories — 15 minutes for the 50% of issues which were identified using other monitoring tools and 45 minutes for the other 50% of issues, which were difficult to resolve without using log data.
- › Sumo Logic was used to automate identification and response for 10% of issues, eliminating 45 minutes of manual labor per issue.
- › For all remaining issues, Sumo Logic enabled the organization to significantly reduce its mean-time-to-repair to only 5 minutes per minor issue. This equated to 40 minutes of labor saved for the 40% of minor issues resolved primarily with log data, and 10 minutes of savings per issue for the other 50% of minor issues.
- › These savings resulted in a total reduction of 310 hours of labor to resolve minor issues per application, per year.
- › The organization took a phased approach to rolling out Sumo Logic, first deploying it within 20 applications in Year 1, followed by 50 in Year 2 and 100 in Year 3.
- › Across applications, the composite organization saved 6,200 hours of DevOps member labor in Year 1, 15,500 hours in Year 2, and 31,000 hours in Year 3.
- › The organization recaptured 50% of time savings as productivity.
- › DevOps members were compensated at an average annual salary of \$120K, burdened at 25% for benefits and a 5% annual raise.

There are several impact risks that may affect the actual value of recaptured productivity an organization may achieve using Sumo Logic:

- › Applications may experience fewer or greater minor issues per year than estimated.
- › Organizations may use a variety of other monitoring tools, enabling DevOps members to resolve issues with a higher or lower MTTR than estimated in this model.
- › Customers may deploy Sumo Logic in more or fewer applications than estimated for this composite organization.
- › The ways in which DevOps teams choose to use Sumo Logic for identification, remediation, and automation may vary in effectiveness.
- › An organization may recapture more or less employee productivity for business value than projected.

To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year risk-adjusted total PV of \$1,412,996.

“Sumo Logic can detect outliers or patterns. It’s an easy way to find out what’s going on, and it eliminates a lot of manual work.”

*Site reliability manager,
publisher/eCommerce*



“Without a log analytics solution like Sumo Logic, the mean-time-to-resolve issues would be exponentially longer.”

*VP of engineering,
cloud software*



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.

Reduced Labor To Resolve Minor Issues: Calculation Table

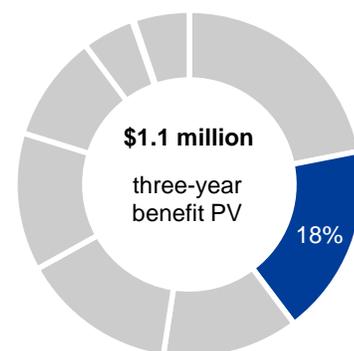
REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
A1	Number of minor issues per application	2 per day	730	730	730
A2	Minor issues prevented through Sumo Logic automation	$A1*10\%$	73	73	73
A3	Time saved per minor issue resolved via automation		45	45	45
A4	Minor issues identified primarily with logs, using Sumo Logic	$A1*40\%$	292	292	292
A5	Reduced mean-time-to-repair with Sumo Logic (minutes)	Before: 45 min After: 5 min	40	40	40
A6	Minor issues identified primarily with alternative monitoring tools	$A1*50\%$	365	365	365
A7	Reduced mean-time-to-repair with Sumo Logic (minutes)	Before: 15 min After: 5 min	10	10	10
A8	Reduced labor hours per application to resolve minor issues	$(A2*A3 + A4*A5 + A6*A7)/60$	310	310	310
A9	Number of applications using Sumo Logic		20	50	100
A10	Total reduction in labor hours to solve minor issues systemwide	$A8*A9$	6,200	15,500	31,000
A11	Total hours of recaptured productivity	50% recapture	3,100	7,750	15,500
A12	Fully loaded DevOps member hourly compensation	\$120K/year 25% burden rate 3% annual raise	\$72.12	\$74.28	\$76.51
At	Reduced labor to resolve minor issues	$A11*A12$	\$223,572	\$575,670	\$1,185,905
	Risk adjustment	↓10%			
Atr	Reduced labor to resolve minor issues (risk-adjusted)		\$201,215	\$518,103	\$1,067,315

Reduced Labor To Resolve Critical Issues

Sumo Logic became a vital tool for interviewees to resolve critical application performance issues. These companies identified that logs were essential to understand what was happening during a critical issue, and to undergo the root-cause analysis to properly solve the issue.

Analyzing logs was excessively cumbersome, time-consuming, and sometimes even impossible without Sumo Logic. An interviewed cloud software company shared, “If we didn’t have a log analytics solution, we would have to log into each instance — it would be a nightmare.” A publisher/eCommerce company shared a similar experience: “Our team can’t manually log in to 50 different servers and search the logs to find exactly what we are looking for. With Sumo Logic, we can just write a query to instantly return data on the entire cluster.”

Additionally, Sumo Logic’s dashboards, alerts, and software integrations made it easy for the DevOps team to access critical information and collaborate with colleagues to resolve the issue. One customer shared, “Sumo Logic helps us coordinate by letting us instantly send a link to the exact query or dashboard they are using, so the team can see exactly what each other is seeing.”



Reduced labor to resolve critical issues:
18% of total benefits

Forrester took the following approach to model the financial impact of this benefit for Sumo Logic customers:

- › For the composite organization, each application was estimated to experience one critical issue per month.
- › Each critical issue took a six-person team an average of 4 hours to resolve, before Sumo Logic.
- › Sumo Logic enabled DevOps members to slash MTTR to 30 minutes.
- › With 252 hours of reduced labor per application, the composite organization grew its total labor savings as it rolled out Sumo Logic across 20 applications, 50 applications, and 100 applications respectively in years 1 through 3.
- › The organization recaptured 50% of time savings as productivity.
- › DevOps members were compensated at an average annual salary of \$120K burdened at 25% for benefits and a 5% annual raise.

There are several impact risks that may affect the actual value of recaptured productivity an organization may achieve using Sumo Logic:

- › An organization may experience varying rates of critical issues.
- › Team structures, application architecture, and usage of alternative monitoring tools may affect the number of employees working on issues and the organization’s MTTR, resulting in diminished or increased savings upon rollout of Sumo Logic.
- › An organization may recapture more or less employee productivity for business value than projected.

To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year risk-adjusted total PV of \$1,148,629.

“Sumo Logic significantly reduced our mean-time-to-respond and mean-time-to-repair issues.”

*Sr. DevOps engineer,
call center technology*



Reduced hours to resolve critical issues over three years: >40,000 hours

Reduced Labor To Resolve Critical Issues: Calculation Table

REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
B1	Number of critical issues per application		12	12	12
B2	Employees involved in resolving critical issues		6	6	6
B3	Reduced mean-time-to-repair critical issues (hours)	Before: 4 hours After: 30 min	3.5	3.5	3.5
B4	Reduced labor hours, per application	B1*B2*B3	252	252	252
B5	Number of applications using Sumo Logic	A9	20	50	100
B6	Total reduced labor hours to solve critical issues	B4*B5	5,040	12,600	25,200
B7	Total hours of recaptured productivity	50% recapture	2,520	6,300	12,600
B8	Fully loaded DevOps member hourly compensation	\$120K/year 25% burden rate 3% annual raise	\$72.12	\$74.28	\$76.51
Bt	Reduced labor to resolve critical issues	B7*B8	\$181,742	\$467,964	\$964,026
	Risk adjustment	↓10%			
Btr	Reduced labor to resolve critical issues (risk-adjusted)		\$163,568	\$421,168	\$867,623

Profit From Increased Customer-Facing Application Availability

Interviewed customers using Sumo Logic shared that by identifying and repairing issues faster, they were able to improve system performance and ultimately increase application availability. Interviewees also used Sumo Logic in development and testing environments to catch issues before they affected customers. As one interviewee described: “There used to be errors in our software that we wouldn’t even notice until it went into production. Running Sumo Logic in our development, testing, and staging environments enables us to detect and fix more errors before they are introduced into production.”

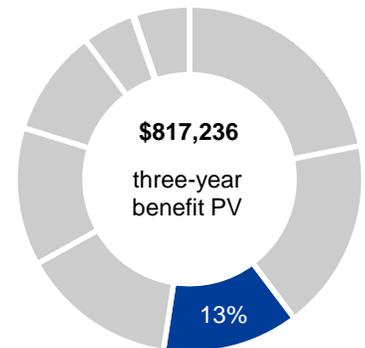
Downtime can cause profit losses for customer-facing companies, as frustrated customers reduce purchases, turn to competitors, or cancel their subscriptions. Forrester measured the potential impact on profit through increased availability using the following assumptions:

- › Availability increased with Sumo Logic by reducing downtime 3.5 hours per incident, at 12 incidents per application per year.
- › The composite organization had 40 customer-facing applications that drove revenue. Sumo Logic was deployed for half of these in Year 1 and the remainder in Year 2.
- › The organization earned \$500M in annual revenue, for a Year 1 average revenue of \$12.5M per application. The business was assumed to grow by 10% annually, for an increased per-application revenue of \$13.8M and \$15.1M in years 2 and 3.
- › The gross profit margin was estimated at 40%.
- › The business drove \$500M in revenue across 40 customer-facing applications, with an average gross margin of 40%. Downtime resulted in a 50% loss of expected hourly profit.

Forrester recognizes that the effect of increased availability will vary. Impact risks that may reduce this benefit include the following:

- › Some organizations may choose to only roll out Sumo Logic in their production environment, which eliminates the potential to improve availability by catching and repairing bugs in development and testing environments before releases go into production.
- › Availability may improve more or less than projected.
- › Certain applications may not directly drive profit or may drive less revenue than projected.
- › The type of customer and competitiveness of the industry will affect the degree to which downtime results in lost sales. For example, a B2B supply company or a cable provider may not lose any buyers if its portals go down, whereas a B2C eCommerce site or a hotel chain with high levels of competition may lose out on significant revenue.
- › The actual projected profit per application, time of day, and total downtime will affect the calculation’s result for readers.

To account for these impact risks and the potential variation in realized benefits depending on business and application type, Forrester adjusted this benefit significantly downward by 25%, yielding a three-year risk-adjusted total PV of \$817,236.



Profit from increased customer-facing application availability: **13% of total benefits**

“Running Sumo Logic in our development, testing, and staging environments enables us to detect and fix more errors before they are introduced into production.”

*VP of engineering,
cloud software*



Profit From Increased Customer-Facing Application Availability: Calculation Table

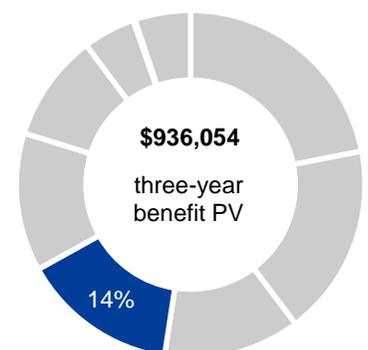
REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
C1	Average number of downtime incidents per application, per year	B1	12	12	12
C2	Reduced length per downtime incident due to Sumo Logic (hours)	Before: 4 hours After: 30 min	3.5	3.5	3.5
C3	Reduced hours of downtime per application	C1*C2	42	42	42
C4	Average annual revenue, per customer-facing application	10% annual business growth	\$12,500,000	\$13,750,000	\$15,125,000
C5	Gross profit margin		40%	40%	40%
C6	Average gross profit, per customer-facing application	C4*C5	\$5,000,000	\$5,500,000	\$6,050,000
C7	Percentage of revenue permanently lost during a downtime incident		50%	50%	50%
C8	Increased profit due to improved availability, per application	C3*C6* (C7/365/24)	\$11,986	\$13,185	\$14,503
C9	Customer-facing applications using Sumo Logic		20	40	40
Ct	Profit from increased customer-facing application availability	C8*C9	\$239,720	\$527,400	\$580,120
	Risk adjustment	↓25%			
Ctr	Profit from increased customer-facing application availability (risk-adjusted)		\$179,790	\$395,550	\$435,090

Recaptured Employee Productivity From Increased Internal Application Availability

Downtime on internal applications could cause wasted employee productivity and have a significant impact on the bottom line. As discussed in the previous benefit category, customers using Sumo Logic improved system performance and ultimately increased application availability by identifying and repairing issues faster. Additionally, by leveraging Sumo Logic in development and testing environments, interviewed organizations were able to identify and fix errors before the release made it into production, reducing the chance of downtime in the future.

Forrester measured the potential impact on productivity via increased availability using the following assumptions:

- › Availability increased with Sumo Logic by reducing downtime 3.5 hours per incident, at 12 incidents per application per year.
- › The composite organization had 10 critical internal applications. Sumo Logic was deployed for these 10 applications in Year 2.
- › The organization employed 2,000 staff, about 70% of whom performed key roles such as order fulfillment, sales, and customer support.
- › Seven and a half percent of employees were affected in each downtime incident and were unable to do their work as a result.
- › Reduced downtime saved 63,000 hours in years 2 and 3, of which the organization recaptured 50% for business value.



Recaptured employee productivity from increased internal application availability: **14%** of total benefits

- › Employees at the composite organization earned an average salary of \$40,000 per year plus a 25% burden rate and a 3% annual salary.

Forrester recognizes that the effect of increased availability will vary. Impact risks that may reduce this benefit include the following:

- › Some organizations may choose to only roll out Sumo Logic in their production environment, which eliminates the potential to improve availability by catching and repairing bugs in development and testing environments before releases go into production.
- › Availability may improve more or less than projected.
- › Downtime for certain internal applications may not cause a total halt in productivity, with employees switching to alternative tasks and methods instead of ceasing work. A warehouse employee or customer support representative may not be able to perform any work without core systems, whereas a sales associate may be able to continue working with alternative methods and minimal reduced productivity.
- › The actual number of employees relying on an application and what time of day the incident occurs will affect the impact of downtime. For example, downtime in a shipping department on a Sunday afternoon will have a much different effect than on a Monday morning.
- › Recapture rates of employee productivity for business value may vary.

To account for these impact risks and variation, Forrester adjusted this benefit significantly downward by 25%, yielding a three-year risk-adjusted total PV of \$936,054.

“Availability has improved with Sumo Logic, especially since we got the staging and test environments on board. There used to be errors we didn’t notice until the release went into production, which had a negative impact on users.”

*VP of engineering,
cloud software*



Recaptured Employee Productivity From Increased Internal Application Availability: Calculation Table

REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
D1	Average number of downtime incidents per application, per year	C1	12	12	12
D2	Reduced length per downtime incident due to Sumo Logic (hours)	C2	3.5	3.5	3.5
D3	Reduced hours of downtime per application	C3	42	42	42
D4	Number of employees		2,000	2,000	2,000
D5	Average number of employees affected per downtime incident on a critical application	D4*7.5%	150	150	150
D6	Labor hours saved via reduced downtime, per internal application	D3*D5	6,300	6,300	6,300
D7	Critical internal applications using Sumo Logic		0	10	10
D8	Total labor hours saved via reduced downtime	D6*D7	0	63,000	63,000
D9	Hours of recaptured productivity, per application	50% recapture	0	31,500	31,500
D10	Average employee fully loaded hourly compensation	\$40K/year 25% burden rate 3% annual raise	\$24.04	\$24.76	\$25.50
Dt	Recaptured employee productivity from increased internal application availability	D9*D10	\$0	\$779,940	\$803,250
	Risk adjustment	↓25%			
Dtr	Recaptured employee productivity from increased internal application availability (risk-adjusted)		\$0	\$584,955	\$602,438

Reduced Customer Support Inquiries

Customers using Sumo Logic were able to identify and resolve issues in a fraction of the time, thereby minimizing the number of customers and users impacted. Because users often reach out to support for assistance when an issue became apparent, interviewees reduced the number of customer support inquiries by reducing the impact of issues. One customer identified that support calls virtually disappeared after rolling out Sumo Logic among its cloud software portfolio: “With our legacy solution, 20% to 30% of our issues were uncovered by customer support. Sumo Logic has reduced those customer support calls to basically zero.”

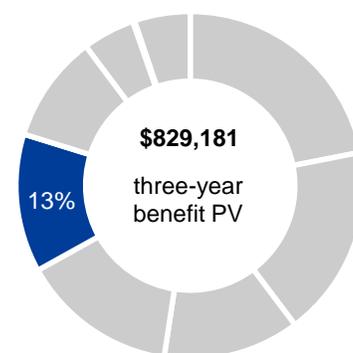
Forrester measured this benefit using the following assumptions:

- › The composite organization received an average of 20,000 annual customer support inquiries per customer-facing application.
- › Reductions in both minor and critical issues led to a conservative 12% reduction in inquiries for applications using Sumo Logic.
- › The organization used Sumo Logic for 20 customer-facing applications in Year 1 and 40 in years 2 and 3.
- › The customer support team estimated a conservative cost of \$5 per inquiry. Typical costs ranged from \$5 to \$10 per inquiry depending on a variety of factors including the ratio of phone/email/chat channels, average inquiry length, and support staff locality.

Forrester recognizes several risks to the value of this benefit:

- › Industry, application purpose, and transactional details will affect the expected volume of inquiries. Hotel chains, SaaS providers, and eCommerce retailers, for example, may face high inquiry volumes.
- › Application architecture and its ability to gracefully degrade will affect the degree to which issues lead to support inquiries, and the benefit will only impact inquiries specifically related to issues and downtime.
- › Locality of customer service representatives, inquiry channel, and average length of inquiry will affect the average cost per inquiry.

To account for these risks, Forrester adjusted this benefit downward by 15%, yielding a three-year risk-adjusted total PV of \$829,181.



Reduced customer support inquiries: 13% of total benefits

“With our legacy solution, 20% to 30% of our issues were uncovered by customer support. Sumo Logic has reduced those customer support calls to basically zero.”

*VP of engineering,
cloud software*



Reduced Customer Support Inquiries: Calculation Table

REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
E1	Estimated average number of customer support inquiries, per customer-facing application		20,000	20,000	20,000
E2	Percent reduction in customer support inquiries		12%	12%	12%
E3	Reduced support inquiries, per application	E1*E2	2,400	2,400	2,400
E4	Customer-facing applications using Sumo Logic	C9	20	40	40
E5	Total reduction in customer support inquiries	E3*E4	48,000	96,000	96,000
E6	Estimated cost per support inquiry		\$5	\$5	\$5
Et	Reduced customer support inquiries	E5*E6	\$240,000	\$480,000	\$480,000
	Risk adjustment	↓15%			
Etr	Reduced customer support inquiries (risk-adjusted)		\$204,000	\$408,000	\$408,000

Reduced Labor To Resolve Potential Security Threats

Businesses face an unrelenting barrage of security threats; it is essential that they identify risks and resolve incidents as quickly as possible to curtail negative impacts. Log aggregation and analytics is an effective tool in a security team's arsenal to detect these issues as quickly as possible, and to identify the root cause to resolve the issues. Using dashboards and alerts, security teams using Sumo Logic identified and resolved threats significantly faster than before. This saved labor hours and helped the organizations understand and mitigate the impact of threats.

- › One customer described such an incident: "We had a phishing attack recently, and we weren't sure how many people had clicked that link. We loaded our office logs into Sumo Logic, and that allowed us to cross-reference users to find who was on our naughty list. It would have taken months of interviews without analyzing log behavior, and we would never have gotten full, honest self-reporting."

The customers interviewed for this study all initially rolled out Sumo Logic for operations use cases; however, the security teams at three of the organizations quickly realized the application for identification and remediation of security threats. These organizations all rolled out Sumo Logic's security capabilities after nine to 18 months, and the implementation grew from there as the overall Sumo Logic deployment spread across the applications portfolio. Organizations also leveraged Sumo Logic to automate issue identification and response. One interviewee stated, "We have used Sumo Logic to identify trends and develop automation so we don't have to manually respond to issues."

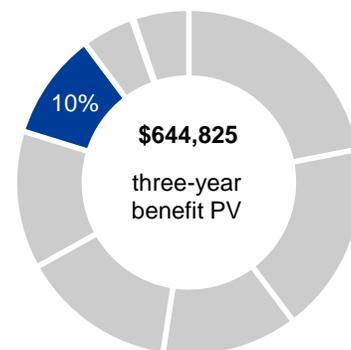
Forrester used the following approach to model this benefit based off information from three out of the four customer interviews:

- › The composite organization was conservatively estimated to face 10,000 security threats per year.
- › Sumo Logic was rolled out for security monitoring starting in Year 2, monitoring 50% of applications and reaching 100% in Year 3.
- › Before Sumo Logic, the mean-time-to-repair security threats was 2 hours per incident.
- › The security response team used Sumo Logic to set up automated response protocols, eliminating the need for manual intervention on 25% of all identified security threats — saving 2,500 labor hours in Year 2 and 5,000 hours in Year 3.
- › For the remaining 75% of issues, SecOps members leveraged Sumo Logic to triage and resolve issues in a fraction of the time — saving 1.5 hours per issue for a reduced MTTR of 30 minutes. This resulted in a time savings of over 5,625 hours in Year 2 and 11,250 in Year 3.
- › The organization recaptured 50% of time savings as productivity.
- › SecOps members were compensated at an average annual salary of \$120K burdened at 25% for benefits and a 5% annual raise.

The mean-time-to-identify and -repair issues will vary for every organization. Key factors in this variance include the structure of the security team, the other tools used in their arsenal, and the size and nature of the typical incidents they face. Teams using Sumo Logic for security monitoring may also experience a higher or lower reduction in

"We identify issues so much sooner than we did before Sumo Logic. It's ridiculous how much more powerful and responsive we are."

*Sr. director of security,
supply chain technology*



Reduced labor to resolve potential security threats:
10% of total benefits

"In security incidents, visibility is everything. With Sumo Logic, we were able to trace the incident, analyze it, and look for abnormalities. That's big."

*Sr. director of security,
supply chain technology*



labor hours depending on the size of the team and the extent to which it leverages the automation and analytics tools.

To account for the risk that this benefit may vary for every organization, Forrester adjusted this benefit downward by 10%, yielding a three-year risk-adjusted total PV of \$644,825.

Reduced Labor To Resolve Potential Security Threats: Calculation Table

REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
F1	Estimated annual potential security threats		10,000	10,000	10,000
F2	Percentage of application stack monitored with Sumo Logic by security team		0%	50%	100%
F3	Security threats monitored by Sumo Logic	F1*F2	0	5,000	10,000
F4	Security threats automatically identified and resolved, with Sumo Logic	F3*25%	0	1,250	2,500
F5	Hours saved per security threat resolved via automation		2	2	2
F6	Avoided labor hours via automated response	F4*F5	0	2,500	5,000
F7	Security threats resolved more quickly with Sumo Logic	F3*75%	0	3,750	7,500
F8	Reduced mean-time-to-resolve security threats (hours)	Before: 2 hours After: 30 min	1.5	1.5	1.5
F9	Reduced labor hours to resolve security threats	F7*F8	0	5,625	11,250
F10	Reduced labor hours to resolve security threats	F6 + F9	0	8,125	16,250
F11	Total hours of recaptured productivity	50% recapture	0	4,063	8,125
F12	Fully loaded SecOps member hourly compensation	\$120K/year 25% burden rate 3% annual raise	\$72.12	\$74.28	\$76.51
Ft	Reduced labor to resolve security threats	F11*F12	\$0	\$301,800	\$621,644
	Risk adjustment	↓10%			
Ftr	Reduced labor to resolve security threats (risk-adjusted)		\$0	\$271,620	\$559,480

Reduced Financial Risk Of Security Breaches

Security breaches pose an immense risk for businesses of every type. Three of the four customers interviewed for this study used Sumo Logic to identify and resolve security threats, investing in the solution with the goal of reducing their exposure to breaches. These interviewees identified that Sumo Logic’s analysis of their log data helped discover previously unidentified security holes, such as unprotected parts of the environment, login attempts from unexpected regions, and beyond. As one interviewee described, “Security incidents are happening all the time, and the question is: Do you know about them? Using Sumo Logic, we realized, ‘Holy cow, we have incidents happening that we didn’t even know about!’”

“Security incidents happen all the time, and the question is: Do you know about them? Using Sumo Logic, we realized, ‘Holy cow, we have incidents happening that we didn’t even know about!’”

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supply chain technology*

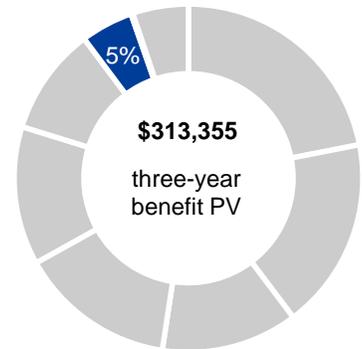


- › One interviewee described how immediately upon enabling Sumo Logic, the company discovered a security hole that had existed for years without anyone’s knowledge — and the company identified and resolved it that same day using Sumo Logic’s analytics. The interviewee explained, “When we turned on Sumo Logic’s security application and loaded our network logs, firewall logs, and beyond, we immediately saw data being sent to a geographic area that we would have never expected. We did an investigation and found that a product had been misconfigured for years.”
- › Customers pointed to alerts and automation as key tactics to identify and resolve potential security threats the moment they occurred. One supply chain technology customer set up a “mission control” of Sumo Logic dashboards on large monitors, so that abnormalities would be immediately visible. Then, using Sumo Logic’s in-depth analytics, the organization could quickly understand the exact nature and ramifications of a threat — and repair the vulnerability quickly. “Sumo Logic has given us visibility for when we do have security incidents to quickly and visually see what’s happening to get ahead of it.”

Ultimately, customers curtailed their vulnerability to data breaches by reducing the number of threats and the time to resolve known threats. Forrester has modeled the value of this benefit based on the following:

- › The Ponemon Institute, a third-party privacy and security research firm, published in its “2017 Cost of a Data Breach” study that the average security breach in the United States affects 28,512 records with a total cost of \$7.35M, with a two-year likelihood of taking place at a US-based company of 12%.² For this study, Forrester has converted this to a one-year likelihood of 6%.
- › Forrester computed \$441,000 in annual financial risk of a breach by multiplying the average \$7.35M breach by the 6% likelihood.
- › The composite organization was conservatively estimated to face 10,000 security threats per year.
- › With an average mean-time-to-repair security threats of 2 hours, the organization faced 20,000 hours of vulnerability before deploying Sumo Logic.
- › Sumo Logic enabled a significant reduction in total hours to resolve security threats (Table F), enabling an overall reduction in hours of vulnerability of 41% in Year 2 and 81% in Year 3.
- › To model this benefit, Forrester divided the \$441K financial risk by 20,000 hours of vulnerability, for an approximate risk value of \$22.05 per hour. By reducing the number of hours of vulnerability to 11,875 in Year 2 and 3,750 in Year 3, the organization avoided \$181K in risk in Year 2 and \$357K in Year 3.

Forrester recognizes that the potential likelihood and size of a breach will vary substantially. Some companies may experience multiple breaches and some may experience none, and the size and cost of each will be unique. While this calculation reflects a conservative approach to risk reduction based on current averages, the actual value will vary. Forrester has consequently adjusted this benefit significantly downward by 25%, yielding a three-year risk-adjusted total PV of \$313,335.



Reduced financial risk of security breaches: **5%** of total benefits

“Our team is fighting phishing incidents every day, and we never know how big or small they are.”

*Sr. director of security,
supply chain technology*



Reduced Financial Risk Of Security Breaches: Calculation Table

REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
G1	Estimated annual potential security threats	F1	10,000	10,000	10,000
G2	Mean-time-to-resolve security threats, before Sumo Logic (hours)		2	2	2
G3	Estimated hours of vulnerability to security threats per year, before Sumo Logic	G1*G2	20,000	20,000	20,000
G4	Hours of vulnerability to security threats per year, with Sumo Logic	G3-F10	20,000	11,875	3,750
G5	Percent reduction in hours of vulnerability to security threats	1-(G4/G3)	0%	41%	81%
G6	Average cost of a security breach, US 2017*		\$7,350,000	\$7,350,000	\$7,350,000
G7	Likelihood of the average sized security breach in the US, 2017*		6%	6%	6%
G8	Estimated expected value of the financial risk of a security breach in the US, 2017*	G6*G7	\$441,000	\$441,000	\$441,000
G9	Financial risk of security breach with Sumo Logic	G8*(1-G5)	\$441,000	\$260,190	\$83,790
Gt	Reduced financial risk of security breaches	G8-G9	\$0	\$180,810	\$357,210
	Risk adjustment	↓25%			
Gtr	Reduced financial risk of security breaches (risk-adjusted)		\$0	\$135,608	\$267,908

*Source: "2017 Cost of a Data Breach," The Ponemon Institute, June 2017

Reduced Labor To Comply With Internal Audits

Sumo Logic was an essential ingredient for all interviewed customers in achieving security certifications and demonstrating compliance for audits. One customer even discussed how demonstrating security credentials such as PCI and ISO 27001 was important for generating new business, especially as B2B clients have become increasingly sensitive to their data security before engaging with a new vendor. Customers shared how these audits, both internal and externally mandated, caused a significant burden on staff in both time and frustration. While this study does not quantify the time savings a company may achieve in complying with external audits due to significant variance in industry needs, it does measure the impact on internal auditing requirements.

The productivity savings calculated here may only minimally impact the bottom line, but interviewees shared that this was frustrating work for employees; by reducing the number of internal audits and the effort required to complete them, SecOps team members could enjoy an improved employee experience. One interviewee said: "Having to pull audit requests is not happy work. Anything we can do to reduce the pain and suffering to our development team earns us good will."

Forrester has taken the following approach to model this benefit:

- › The composite organization conducted approximately one internal audit per month. Because Sumo Logic helped demonstrate improved monitoring capabilities and reduced MTTI/MTTR, the organization could reduce the number of internal audits by 75% in Year 3.

"Sumo Logic's data helped us show our auditors that we had strong processing integrity and helped us earn multiple security certifications we could never have done beforehand."

*Sr. director of security,
supply chain technology*



"Sumo Logic is essential for PCI compliance. We are required to have a tool like it, but Sumo Logic additionally saves time and is much easier to use compared to alternative tools we have used."

*Site reliability manager,
publisher/eCommerce*



- › Each internal audit originally required two FTEs for one full day to comply, but with Sumo Logic, one FTE was able to gather the same data in no more than 2 hours.
- › As Sumo Logic was deployed throughout the environment, time-to-comply decreased by a factor of two annually with only 30 minutes required in Year 3.
- › The business was able to recapture 50% of the saved labor hours for other productive tasks.
- › SecOps members were paid an average salary of \$120K per year, plus 25% burden rate and a 3% annual raise.

Different businesses face varying internal auditing needs based on industry, size, local regulations, and data sensitivity. Audit compliance teams may vary in size, may require more time to complete the average audit, and may face a different number of audits than projected. Not all customers will be able to reduce the number of internal audits they complete per year, especially in cases of rigid government regulation.

To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year risk-adjusted total PV of \$11,167.

“Sumo Logic helps us demonstrate to auditors that we are on top of monitoring. It allows us to conduct fewer audits and takes less time per audit by our security staff.”

*Sr. DevOps engineer,
call center technology*



Reduced Labor To Comply With Internal Audits: Calculation Table

REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
H1	Number of annual internal audits, before SL		12	12	12
H2	Percent reduction in number of required audits		25%	50%	75%
H3	Number of annual internal audits, with SL	$H1*(1-H2)$	9	6	3
H4	Employees required to perform audits, before SL		2	2	2
H5	Employees required to perform audits, with SL		1	1	1
H6	Hours required to perform audits, before SL		8	8	8
H7	Hours required to perform audits, with SL (hours)		2	1	0.5
H8	Reduced labor hours from avoided audits	$(H1-H3)*H4*H6$	48	96	144
H9	Reduced labor hours to comply with audits	$H3*(H4-H5)*(H6-H7)$	54	42	23
H10	Total reduced labor hours for internal auditing	$H8+H9$	102	138	167
H11	Hours of recaptured productivity	50% recapture	51	69	84
H12	SecOps member fully loaded hourly compensation	\$120K/year 25% burden rate 3% annual raise	\$72.12	\$74.28	\$76.51
Ht	Reduced labor to comply with internal audits	$H11*H12$	\$3,678	\$5,125	\$6,427
	Risk adjustment	↓10%			
Htr	Reduced labor to comply with internal audits (risk-adjusted)		\$3,310	\$4,613	\$5,784

Cost Avoidance Of An Alternative Log Aggregation Solution

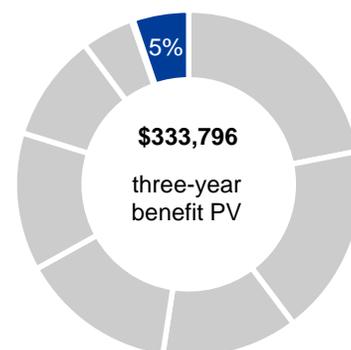
Without Sumo Logic, the interviewed customers identified that they needed alternative tools to undergo log analysis. While these tools were not as advanced, they still provided essential services. However, they could not scale and required significant administration effort to keep them functioning. By adopting Sumo Logic, customers were able to eliminate their on-premises open source tool deployments along with their reallocated system administration tasks.

- › One cloud software customer described: “There is a lot less overhead to add a new data source into Sumo Logic. In the past, it would have required scheduling a meeting to discuss the needs, figure out how to provision the source, and get it set up. Now we can just send a documentation link to the developer to run with.”
- › A supply chain technology company shared that it was able to eliminate its previous solution: “We are a heavy DevOps environment, and we’re all about visibility and transparency. Sumo Logic allowed us to leverage logging and monitoring for every single one of our applications.”

Forrester modeled the impact of this benefit on the composite organization based on the following assumptions:

- › The organization was able to eliminate a custom implementation of an open source log analytics tool it maintained and thereby eliminated several servers, saving \$10K in Year 1.
- › The composite organization previously employed one full-time system administrator at an annual salary of \$120K plus a 25% burden rate to keep the log analytics solution running. The organization reallocated this headcount to other systems administration functions.

An organization may have a variety of before-states before deploying Sumo Logic. The exact hardware, software, and administration costs of those legacy solutions may differ. To account for these risks, Forrester adjusted this benefit downward by 15%, yielding a three-year risk-adjusted total PV of \$333,796.



Cost avoidance of an alternative log aggregation solution: **5% of total benefits**

Cost Avoidance Of An Alternative Log Aggregation Solution: Calculation Table

REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
I1	Elimination of on-premises servers previously used for open source log aggregation software		\$10,000	\$0	\$0
I2	Savings by repurposing a systems administrator for log administration	\$120K/year 25% burden rate 3% annual raise	\$150,000	\$154,500	\$159,135
It	Cost avoidance of an alternative log aggregation solution	I1+I2	\$160,000	\$154,500	\$159,135
	Risk adjustment	↓15%			
Itr	Cost avoidance of an alternative log aggregation solution (risk-adjusted)		\$136,000	\$131,325	\$135,265

Unquantified Benefits

In addition to the benefits quantified above, the Sumo Logic customers interviewed for this study identified several other key benefits that could not be quantified:

- › **Improved user experience and product strategy by leveraging Sumo Logic’s log analytics to understand customer behavior and product performance.** Log data could demonstrate what elements of a product were underused or faced higher rates of issues, and that behavioral data could be leveraged to aid product teams to improve the design and targeting of the products themselves. While not all customers currently use Sumo Logic for business insights, all plan to introduce and increase this analytics usage over the next two years.
 - One interviewee described such an insight: “Internally, we thought everybody was using one of our key application features, but with Sumo Logic, we discovered only 6% of our customers actually used it. For our business to grow and meet our goals, we knew this needed to increase, so we built a new product to better solve this problem. Adoption has been great.”
 - The power of these insights was demonstrated by a similar anecdote: “We used Sumo Logic’s log analytics to discover a critical problem in one product, where almost 10% of key actions failed. This information helped us solve the issues, and now the product enjoys a 99%+ success rate.”
- › **Enhanced compliance to external requirements and reduced effort to demonstrate adherence during audits.** Depending on industry, organizations face a wide variety of rigorous audit requirements from the General Data Protection Regulation (GDPR) to the Health Insurance Portability and Accountability Act (HIPAA). The internal effort to comply can be very substantial, but even worse, failing to comply can carry huge costs from fines or lawsuits. Sumo Logic’s solution can enable companies to better meet these stringent requirements, while also significantly reducing the effort required both to comply with regulations and to demonstrate fulfillment of those requirements during an audit.
- › **Increased sales by demonstrating security strength through certifications.** One customer shared, “As a SaaS provider, we need to be able to articulate our security cluster to show our customers that we have these controls in place to protect their information.” By earning and proving certifications such as PCI compliance and ISO 27001, the organization won a higher ratio of sales contracts.
- › **Reduced development effort and avoided product maintenance by identifying and repairing issues during development and testing phases with root-cause analysis.** Fixing bugs during development is typically much faster and cheaper as compared to in production, so by using Sumo Logic in the development and QA phases, organizations were able to avoid potential future costs. Just as DevOps members saved time to identify and repair bugs in production, developers working on releases could also use Sumo Logic’s root-cause analysis to understand and repair issues more quickly.
- › **Improved systems visibility for executives and product teams.** Easy-to-understand dashboards enabled site reliability and SecOps teams to share key system statistics for a less technical audience.

“We have used analytics from Sumo Logic many times to identify underused features, create product improvements, and redesign the user interface.”

*VP of engineering,
cloud software*



“We look to Sumo Logic for contextual information to help understand who’s using our software, how they’re using it, and how they adopt features.”

*VP of engineering,
cloud software*



“Customers ask us to show that we have security controls in place, and that we’re audited and paying attention to those reports. We would have lost deals without these security certifications.”

*Sr. director of security,
supply chain technology*



“We are huge Sumo Logic fans because it’s given us complete visibility into all of our logs, which come from all over.”

*Sr. director of security,
supply chain technology*



- › **Reduced number of critical incidents by identifying and repairing issues before they severely impacted users.** One interviewee shared: “Sumo Logic will send alerts before an issue causes a significant impact. It helps prevent those situations where everything comes toppling over, and we have fewer major incidents as a result.”
- › **Increased ability to transition toward microservices and containerized architectures.** A senior DevOps engineer explained, “Microservices don’t work without a log analytics solution to follow people across the distributed microservice architecture.”
- › **Allowed for democratization of issue identification and resolution.** Simpler tools, dashboards, alerts, and analysis offered a minimal learning curve for product teams to work on their own, while overarching DevOps teams could monitor the environments using systemwide dashboards and intervene should something need escalation. One customer shared, “Our site reliability team aims help developers run their own infrastructure and services.” Another customer shared a similar sentiment: “We built an operational readiness checklist to certify releases for production. Sumo Logic is included for log aggregation and dashboarding, and it has really opened our developers’ eyes to see things they didn’t previously have.”

“Microservices don’t work without a log analytics solution to follow people across the distributed microservice architecture.”

Sr. DevOps engineer, call center technology



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 Sumo Logic and later realize additional uses and business opportunities, including:

- › Leveraging Sumo Logic to discover and design new product features and improved user experiences.
- › Deploying Sumo Logic to an initial slate of applications, but later rolling it out for other applications.
- › Deploying Sumo Logic to only production environments for applications, but later rolling it out into development, testing, and performance.
- › Deploying Sumo Logic for only the operations or security use case, but later rolling it out for the other use case.

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.

Total Costs

REF.	COST	INITIAL	YEAR 1	YEAR 2	YEAR 3	TOTAL	PRESENT VALUE
Jtr	Sumo Logic costs	\$31,500	\$378,000	\$850,500	\$1,512,000	\$2,772,000	\$2,214,017
Ktr	Internal labor for PoC and implementation	\$19,040	\$0	\$0	\$0	\$19,040	\$19,040
Ltr	Internal labor for user training	\$2,726	\$15,448	\$39,777	\$78,327	\$136,278	\$108,492
Mtr	Internal labor for system administration	\$476	\$10,154	\$16,423	\$23,818	\$50,871	\$41,175
	Total costs (risk-adjusted)	\$53,742	\$403,603	\$906,700	\$1,614,145	\$2,978,189	\$2,382,724

Sumo Logic Costs

The primary cost for Sumo Logic is comprised of subscription fees to use the software, plus a small amount of additional cost for professional services to support implementation, training, and maintenance.

- › The subscription fee to use Sumo Logic is driven by the amount of log data ingested into the application. As usage spikes can cause significant daily, weekly, or even seasonal variation, Sumo Logic uses monthly quotas so that organizations don't incur overage fees or experience outages due to daily spikes.
- › The customers interviewed for this study indicated that Sumo Logic was very flexible to build a pricing model that matched their organization's needs, even if they experienced significant seasonal variation in usage. One customer explained, "We experience higher volumes in November and December, and Sumo Logic has been great about helping build a contract model that is right for us."
- › Another customer valued Sumo Logic's professional services to help the organization get off the ground quickly: "When we first moved to Sumo Logic, we paid for onboarding and training professional services to help our engineers and product managers understand how to use the solution and build dashboards to help them do their jobs."
- › Continuing to partner with Sumo Logic over the years was also valuable for interviewees as they tried to tackle new problems, implement new features, or find ways to better use the product. One supply chain technology company explained: "Sumo Logic will regularly come back and work with our team to improve our systems. We try to be an innovative, forward-thinking company, and they are too." Another shared, "Our technical support representative helped train our staff, find solutions for our problems, and build actual syntax to get exactly what we wanted."

Forrester used the following approach to model a conservative estimate of Sumo Logic's costs for the composite organization:

- › The organization rolls out Sumo Logic to 20, 50, and 100 applications respectively in years 1, 2, and 3.
- › Each application is estimated to produce an average of 10 gigabytes in log data per day, equaling 200 GB, 500 GB, and 1 TB in average daily ingest for years 1 through 3.

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 \$2.4 million.

"We experience higher volumes in November and December, and Sumo Logic has been great about helping build a contract that is right for us."

*Sr. director of security,
supply chain technology*



"Sumo Logic will regularly work with our team to improve our systems. We try to be an innovative, forward-thinking company, and they are too."

*Sr. director of security,
supply chain technology*



- › Sumo Logic charged \$30K in initial professional services fees to implement the solution and train core employees.

Sumo Logic’s fees will vary relative to each organization’s needs, based on the following criteria:

- › The average amount of log data ingested daily into Sumo Logic.
- › The cadence of application usage and log data ingest. Businesses often face seasonal spikes in usage, which may require negotiation of an alternative pricing model.
- › The length of time for which a business desires its log data to be stored.
- › The organization’s specific needs for professional services.

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.

To account for these risks, Forrester adjusted this cost upward by 5%, yielding a three-year risk-adjusted total PV of \$2,214,017.

Sumo Logic Costs: Calculation Table						
REF.	METRIC	CALC.	INITIAL	YEAR 1	YEAR 2	YEAR 3
J1	Software license			\$360,000	\$810,000	\$1,440,000
J2	Professional services fees		\$30,000	\$0	\$0	\$0
Jt	Sumo Logic costs	J1+J2	\$30,000	\$360,000	\$810,000	\$1,440,000
	Risk adjustment	↑5%				
Jtr	Sumo Logic costs (risk-adjusted)		\$31,500	\$378,000	\$850,500	\$1,512,000

Internal Labor For PoC And Implementation

Interviewees for this study remarked that the process to scope and implement Sumo Logic was simple and fast.

- › Sumo Logic conducted a free-of-charge proof of concept for four applications, so organizations could see exactly how the collectors needed to be set up and review the analytics outputs to ensure it met their needs. Customers shared that this process was impressive; one described: “We brought in Sumo Logic for a proof of concept — it was crazy how quickly we could see the data and how efficient it was.”
- › The PoC was released into production seamlessly after approval. Implementation of the other 16 applications followed swiftly.
- › Customers were hesitant to believe Sumo Logic’s short implementation time, but after the fact, noted that it went even faster than Sumo Logic had claimed. A cloud software company explained: “We initially scoped implementation to be one month for a six-person team to launch Sumo Logic, but we ended up getting it done within two weeks. There’s no way I would have believed it if you told me that before we did it.”

Forrester used the following to model the PoC and implementation costs:

- › The composite organization had a six-person team manage the proof of concept and implementation process.
- › These FTEs dedicated approximately 25% of their time to this project.
- › PoC, contracting, and implementation took only four weeks in total.



One month
Total implementation
and deployment time

“We scoped implementation to be one month for a six-person team to launch Sumo Logic, but we ended up getting it done within two weeks. There’s no way I would have believed it if you told me that before we did it.”

*VP of engineering,
cloud software*



- › These employees were compensated with an average annual salary of \$120K plus a 25% burden rate.

The length of time and cost of this phase may vary for different organizations. Building consensus around implementation, selecting applications as candidates, and signing contracts could take longer than projected. Additionally, a larger team may be required, or team members may need to devote more than 25% of their time to implementation.

To account for these risks, Forrester adjusted this cost upward by 10%, yielding a three-year risk-adjusted total PV of \$19,040.

Internal Labor For PoC And Implementation: Calculation Table

REF.	METRIC	CALC.	INITIAL	YEAR 1	YEAR 2	YEAR 3
K1	FTEs involved in PoC and implementation		6			
K2	Weeks to complete		4			
K3	Percent dedicated		25%			
K4	Labor hours to complete proof of concept and implementation	$K1 * K2 * K3 * 40$	240			
K5	Fully loaded hourly compensation	\$120K/year 25% burden	\$72.12			
Kt	Internal labor for PoC and implementation	$K4 * K5$	\$17,309	\$0	\$0	\$0
	Risk adjustment	↑10%				
Ktr	Internal labor for PoC and implementation (risk-adjusted)		\$19,040	\$0	\$0	\$0

Internal Labor For User Training

Customers shared that training employees was fast and easy. Sumo Logic offered live, virtual, and prerecorded sessions along with an extensive knowledge base for self-service. It only took a couple of hours to train users to set up the collectors, queries, dashboards, and alerts. After initial training, users would occasionally refer to self-service articles to learn new features or solve specific problems. Support was easy to get if needed. One interviewee stated: “Sumo Logic’s support team has been very helpful and responsive. They conduct regular trainings, and if we can’t figure something out, they’ll help us build it. They want us to be successful with their product.”

Forrester used the following approach to model employee training costs for the composite organization:

- › Users required an average of 6 hours of initial training and 3 hours of annual continual learning to stay abreast of best practices and new features. Length varied for administrators, analysts, and other roles.
- › Six employees conducted training during PoC and 34 during Year 1.
- › In Year 2, the organization experienced 25% churn of its DevOps and SecOps teams, leaving 30 pretrained employees to participate in continual learning. The organization trained 10 users to replace former employees plus an additional 60 who worked on applications that were newly rolling out Sumo Logic.



6 hours
Initial user training

3 hours
Annual continual learning

- › In Year 3, the organization again experienced 25% employee churn, leaving 75 pretrained employees to participate in continual learning. It trained 25 users to replace former employees plus an additional 125 who worked on applications that were newly rolling out Sumo Logic.
- › Users were compensated at an average annual salary of \$120K plus a 25% burden rate and a 3% annual raise.

Differing organizational or product team structures may affect the number of employees needing to be trained per application to use Sumo Logic. Some employees may require deeper expertise depending on their use case, and therefore may require more training than projected.

To account for these risks, Forrester adjusted this cost upward by 5%, yielding a three-year risk-adjusted total PV of \$108,492.

Internal Labor For User Training: Calculation Table

REF.	METRIC	CALC.	INITIAL	YEAR 1	YEAR 2	YEAR 3
L1	Hours for initial Sumo Logic training		6	6	6	6
L2	Hours for continual learning training		3	3	3	3
L3	Total number of Sumo Logic users	25% employee turnover	6	40	100	200
L4	Users participating in initial training	Y1: L3-L3 ^{initial} Y2, Y3: L3-L5	6	34	70	125
L5	Users in continual learning training	L3 ^{PY} *75%	0	0	30	75
L6	Hours of user training	L1*L4+L2*L5	36	204	510	975
L7	Fully loaded hourly compensation	\$120K/year 25% burden 3% annual raise	\$72.12	\$72.12	\$74.28	\$76.51
Lt	Internal labor for user training	L6*L7	\$2,596	\$14,712	\$37,883	\$74,597
	Risk adjustment	↑5%				
Ltr	Internal labor for user training (risk-adjusted)		\$2,726	\$15,448	\$39,777	\$78,327

Internal Labor For System Administration

Minimal labor was required by customers for relationship management, support tickets, system administration, and setting up collectors.

- › Users experienced a minimal learning curve for setting up alerts, dashboards, and queries. One interviewee stated, “Trying to figure out what you’re looking for can take the most time, but once you know that, setting up the dashboard is very fast.” Another shared, “The steepest learning curve was just understanding how to write queries to extract information you want from the data.”
- › Interviewees shared that it was much easier to set up collectors, dashboards, alerts, and queries than it would have been otherwise. As one described: “There is a lot less overhead to add a new data source into Sumo Logic than our legacy solution. In the past, it would have required scheduling a meeting to discuss the needs, figure out how to provision the source, and get it set up. Now we can just send a documentation link to the developer to run with.”



30 minutes
To set up a collector in a new application

- › Customers found that system administration and managing support tickets with Sumo Logic was an excellent experience. They reported fast response times from support techs who went the extra mile to solve their problems. As one put it, “It was always a battle with our legacy solution to prove that an issue was even something they were supposed to help us with. Sumo Logic’s support organization is head and shoulders better than others we’ve experienced — the response time is always good, they run with us to solve it, and they even figure out new ways to chart or query data to answer your questions.”

Forrester modeled this cost using the following assumptions:

- › One employee devotes 2 hours per week in Year 1, increasing to 3 hours in Year 2 and 4 hours in Year 3, liaising with Sumo Logic for support tickets and other system administration needs. This number increases due to the increased number of collectors, users, and applications engaged with the solution.
- › The organization connects 20 applications initially, followed by 30 more in Year 2 and 50 more in Year 3.
- › Setting up the Sumo Logic data collector took 30 minutes. A typical application had three collectors.

Higher levels of application or organizational complexity may result in higher costs. To account for these risks, Forrester adjusted this cost upward by 10%, yielding a three-year risk-adjusted total PV of \$41,175.

“Sumo Logic’s support organization is head and shoulders better than others we’ve experienced — the response time is always good, they run with us to solve it, and they even figure out new ways to chart or query data to answer your questions.”

*VP of engineering,
cloud software*



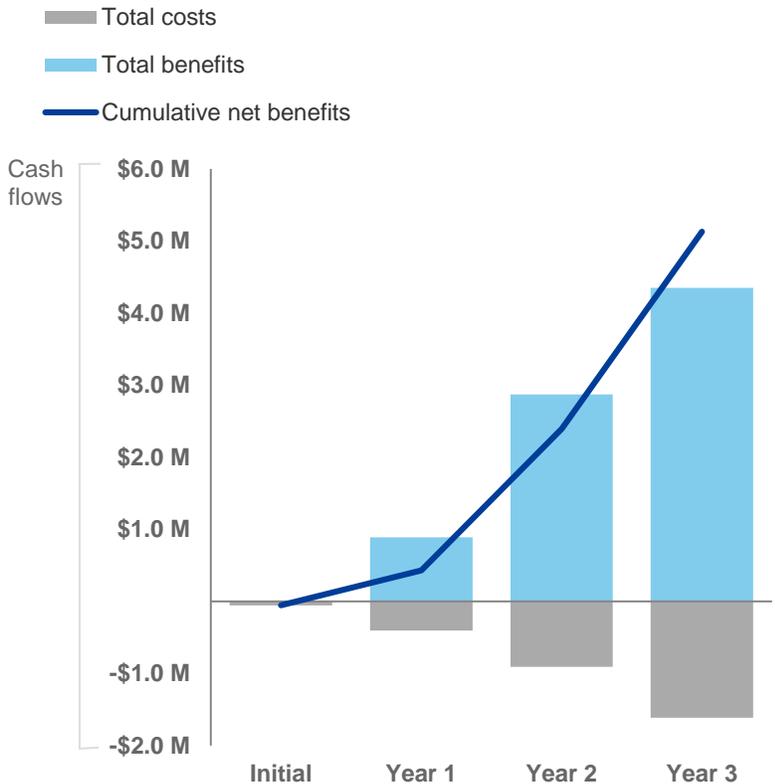
Internal Labor For System Administration: Calculation Table

REF.	METRIC	CALC.	INITIAL	YEAR 1	YEAR 2	YEAR 3
M1	System administration and relationship management		0	104	156	208
M2	Number of new services connected		4	16	30	50
M3	Hours required to set up a Sumo Logic collector		0.5	0.5	0.5	0.5
M4	Average number of collectors per application		3	3	3	3
M5	Annual hours to set up collectors	M2*M3*M4	6	24	45	75
M6	Total internal labor hours	M1+M5	6	128	201	283
M7	Fully loaded hourly compensation	\$120K/year 25% burdened 3% annual raise	\$72.12	\$72.12	\$74.28	\$76.51
Mt	Internal labor for system administration	M6*M7	\$433	\$9,231	\$14,930	\$21,652
	Risk adjustment	↑10%				
Mtr	Internal labor for system administration (risk-adjusted)		\$476	\$10,154	\$16,423	\$23,818

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	(\$53,742)	(\$403,603)	(\$906,700)	(\$1,614,145)	(\$2,978,189)	(\$2,382,724)
Total benefits	\$0	\$887,883	\$2,870,941	\$4,348,901	\$8,107,726	\$6,447,239
Net benefits	(\$53,742)	\$484,281	\$1,964,241	\$2,734,757	\$5,129,536	\$4,064,515
ROI						171%
Payback period						<6 months

Sumo Logic: Overview

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

Sumo Logic is a secure, AWS-hosted machine data analytics service, delivering real-time insights from logs, metrics, and event data across the entire application life cycle and stack. The Sumo Logic service unifies log data and time-series metrics, leveraging machine learning analysis to uncover real-time insights into application operations and security. More than 1,000 customers around the globe rely on Sumo Logic for the analytics and insights to build, run, and secure their modern applications and cloud infrastructures.

The Sumo Logic service provides:

- › **Granular visibility across your entire app stack.** Sumo Logic gives you line of sight into both cloud and hybrid applications, infrastructures, and services.
- › **Proactive problem identification and troubleshooting.** Sumo Logic leverages powerful machine learning-driven analytics capabilities such as pattern identification, outlier detection, and predictive trending to quickly alert and troubleshoot performance and security issues.
- › **Prebuilt analytics and dashboard support for AWS, Azure, hybrid, and on-premise applications, infrastructure, and services.** Sumo Logic also offers operations and security support for Salesforce, Box, O365, and G Suite.
- › **Instant value with a highly scalable and secure SaaS service.** With Sumo Logic's AWS-based SaaS offering, you can get started in minutes and have access to all the latest capabilities without the need for time-consuming, expensive upgrades. All your data is protected in the Sumo Logic platform, which has industry-best security certifications, including PCI DSS 3.1 Service Provider Level 1 and HIPAA.
- › **Elastic scalability.** The Sumo Logic multitenant architecture scales on demand to support rapid application growth and cloud migration. The service overcomes the inherent limitations of traditional architectures by allowing organizations to burst as needed without any manual intervention.

Sumo Logic is a secure, AWS-hosted machine data analytics service, delivering real-time insights from logs, metrics, and event data across the entire application life cycle and stack.

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.

Appendix B: Endnotes

¹ Source: “2017 Cost of a Data Breach,” The Ponemon Institute, June 2017.

² Ibid.