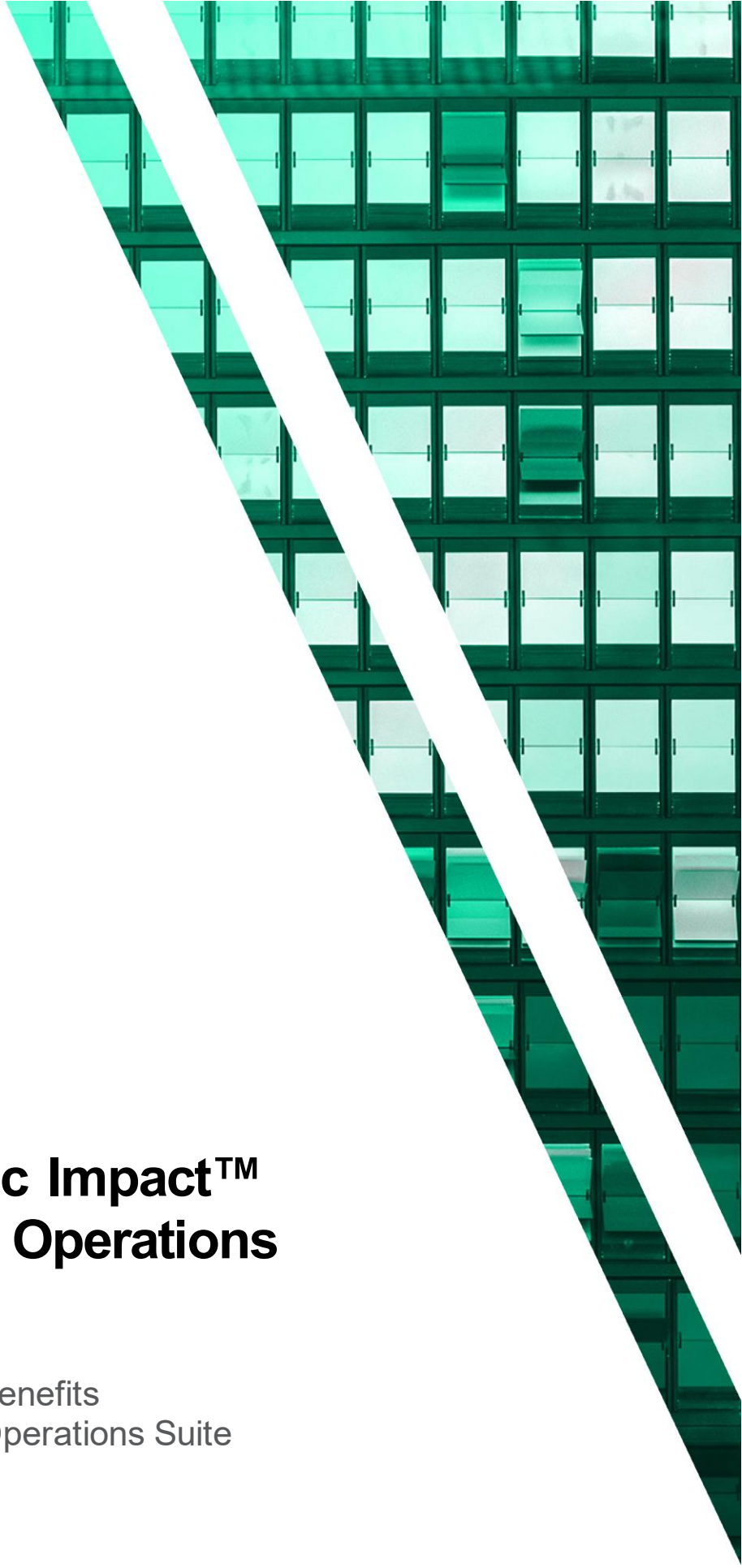
FORRESTER®



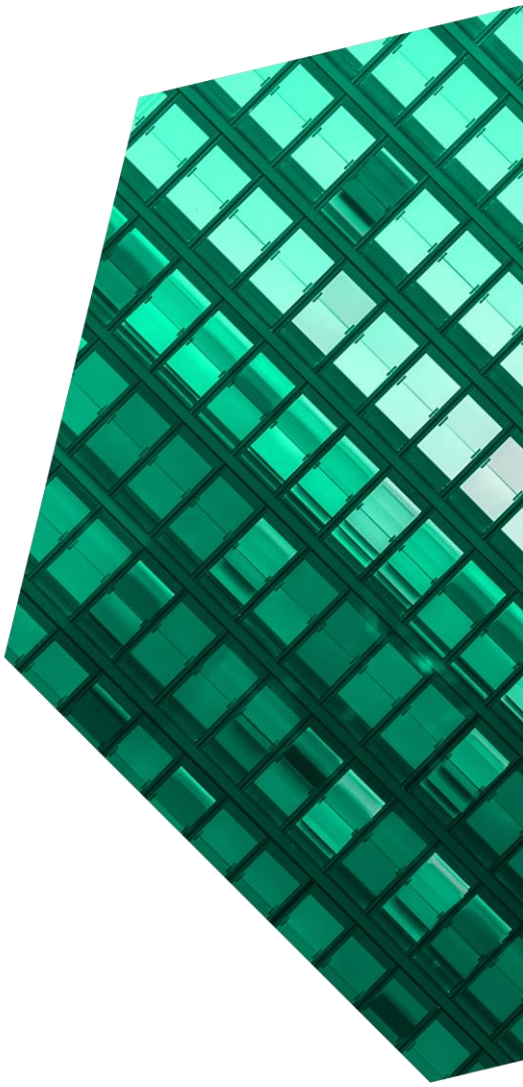
The Total Economic Impact™ Of Google Cloud's Operations Suite

Cost Savings And Business Benefits Enabled By Google Cloud's Operations Suite

OCTOBER 2022

Table Of Contents

Consultant: *Rachel Ballard*



ABOUT FORRESTER CONSULTING

Forrester provides independent and objective research-based consulting to help leaders deliver key transformation outcomes. Fueled by our customer-obsessed research, Forrester's seasoned consultants partner with leaders to execute on their priorities using a unique engagement model that tailors to diverse needs and ensures lasting impact. For more information, visit forrester.com/consulting.

Executive Summary

Today's enterprises deploy an increasing number of cloud solutions to remain competitive. The success of these tools requires an effective observability platform that provides visibility into cloud-based applications and service performance and the ability to resolve issues quickly, avoiding costly downtime. With Google Cloud's operations suite, teams gain enhanced observability of cloud-based applications and resources, resulting in operational efficiencies, reduced latency, and improved uptime.

Google Cloud's operations suite offers organizations logging, monitoring, and storage capabilities as well as real-time visibility into the health and performance of their cloud-powered application environments. Providing analytics, custom metrics, and alerts, the operations suite allows teams to quickly react, troubleshoot, and resolve cloud resource issues. Google Cloud's operations suite integrates seamlessly with other solutions and offers a straightforward implementation with minimal ongoing maintenance.

Google commissioned Forrester Consulting to conduct a Total Economic Impact™ (TEI) study and examine the potential return on investment (ROI) enterprises may realize by deploying Google Cloud's operations suite.[1] The purpose of this study is to provide readers with a framework to evaluate the potential financial impact of the operations suite on their organizations.

KEY STATISTICS

Return on investment (ROI)
265%

Net present value (NPV)
$7.5M

Consolidation of legacy tools
$8 million

To better understand the benefits, costs, and risks associated with this investment, Forrester interviewed four representatives with experience using Google Cloud's operations suite. For the purposes of this study, Forrester aggregated the interviewees' experiences and combined the results into a single composite organization that is an enterprise-sized company with global operations and revenue of $15 billion per year.

Prior to using Google Cloud's operations suite, the interviewees' organizations managed logging, monitoring, and storage with a combination of tools in an on-premises environment. The legacy tools lacked scalability and, with the volume of ingested logs constantly rising, the organizations frequently required additional storage and upgrades at a significant cost. Lacking a centralized platform with real-time visibility, IT teams spent an increasing amount of time identifying, troubleshooting, and

resolving issues, which was not logistically or economically tenable.

After the investment in Google Cloud's operation suite, the interviewees' organizations sunsetted their on-premises legacy systems, resulting in a considerable savings benefit. Additionally, with a centralized cloud-based logging and monitoring platform, IT teams gained enhanced observability into their cloud-driven deployments, resulting in operational efficiencies and the ability to focus on higher-value activities.

KEY FINDINGS

Quantified benefits. Three-year, risk-adjusted present value (PV) quantified benefits for the composite organization include:

- **IT cloud team operations efficiency gains.** Since the adoption of the operations suite, tasks, such as cloud resource monitoring, log management, and data searches, take significantly less time. Cloud observability and the ability to create alerts enable the IT cloud team to find relevant information required to resolve system, application-related issues more quickly. The total risk-adjusted PV of the team's operational efficiency benefit totals $635,000.
- **Reassignment of development operations (DevOps) engineers to higher-level tasks**. As the composite organization no longer requires that the DevOps team create in-house solutions and maintain on-premises legacy tools, the organization reassigns seven DevOps engineers, resulting in a risk-adjusted PV savings of $1.6 million over three years.
- **Consolidation of legacy tools.** By decommissioning the on-premises solution and eliminating the associated costs of hardware maintenance and replacement, the composite realizes considerable savings. The three-year, risk-adjusted PV savings benefit due to the consolidation of legacy tools totals $8 million.

Unquantified benefits. Benefits that provide value for the composite organization but are not quantified in this study include:

- **Enhanced security posture.** With the ability to better monitor and access a greater volume of log information in real time, the IT cloud team resolves issues faster and prevents the significant impact of larger, more damaging security events.
- **Improved reporting and analytics**. A centralized, customizable dashboard provides multiple business units access to previously siloed information required to perform their tasks.
- **Scalability.** As the composite's data volume continues to grow, the operations suite provides flexibility and scalability to satisfy the changing demands. The platform accommodates new integrations, upgrades, and revisions without additional internal resources or new hardware.

Costs. Three-year, risk-adjusted PV costs for the composite organization include:

- **An annual subscription fee.** The volume of ingested logs per day and metrics the composite requires drive the cost of the operations suite. The composite's three-year, risk-adjusted PV subscription cost totals $1.9 million.
- **Initial and ongoing costs.** Initial costs include internal resources required for implementation, initial training, and the cost incurred to maintain the on-premises, legacy solution for one year. Ongoing costs include the management of the platform and ongoing training. The total risk-adjusted, three-year PV of initial and ongoing costs is $933,000.

The representative interviews and financial analysis found that a composite organization experiences benefits of $10.3 million over three years versus costs of $2.8 million, adding up to a net present value (NPV) of $7.5 million and an ROI of 265%.

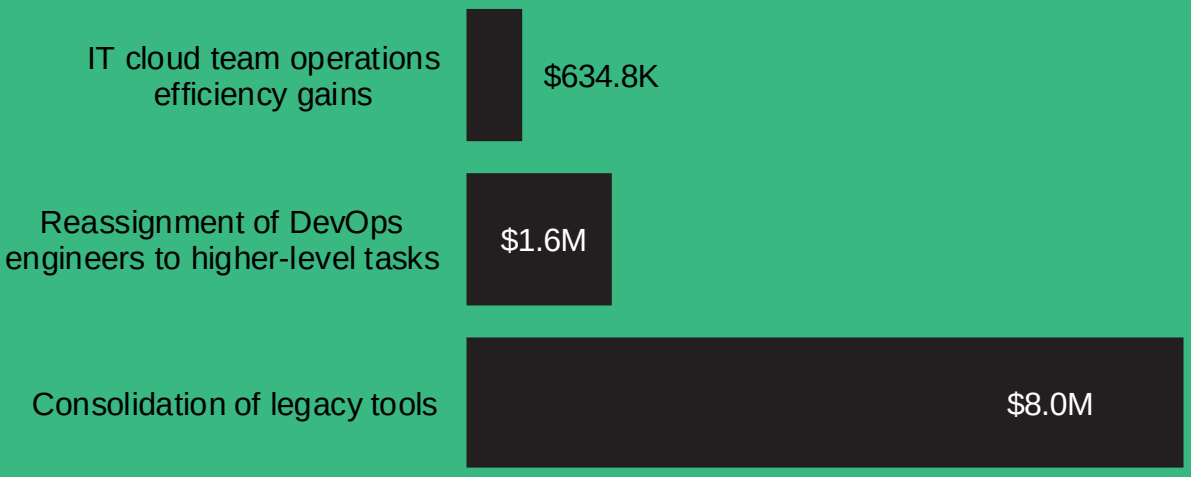
ROI
265%

BENEFITS PV
$10.3M

NPV
$7.5M

PAYBACK
<6 months

Benefits (Three-Year)



“We now have a single view with a dashboard to see the data. And it’s easier to access. I don’t need to look into multiple tools or random containers when I need to find data to resolve performance issues.”

— Infrastructure team leader and security engineering manager, global energy

TEI FRAMEWORK AND METHODOLOGY

From the information provided in the interviews, Forrester constructed a Total Economic Impact™ framework for those organizations considering an investment in Google Cloud's operations suite.

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 Google Cloud's operations suite can have on an organization.

DUE DILIGENCE

Interviewed Google stakeholders and Forrester analysts to gather data relative to Google Cloud's operations suite.

INTERVIEWS

Interviewed four representatives at organizations using Google Cloud's operations suite to obtain data with respect to costs, benefits, and risks.

COMPOSITE ORGANIZATION

Designed a composite organization based on characteristics of the interviewees' 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 interviewees.

CASE STUDY

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

The Google Cloud's Operations Suite Customer Journey

Drivers leading to the operations suite investment.

Interviews

Role	Industry	Organization description
Senior product manager	IT cloud computing	$11 billion annual revenue
Manager, GCP	Telecommunications	Using Google Cloud's operations suite for three years
Infrastructure team leader and security engineering manager	Global energy	Multinational organization
CEO	IT cloud cost optimization	20 Google Cloud's operations suite users

KEY CHALLENGES

Prior to the implementation of Google Cloud's operations suite, the interviewees' organizations used a combination of internal systems and other third-party solutions to log, monitor, and manage their systems' cloud resources. Lacking visibility, accessibility, and capacity, managing the increasing volume of data was cumbersome, time-consuming, and inefficient as team members spent an inordinate amount of time finding necessary data to resolve performance issues when they arose, resulting in unnecessary cost to the organization and exposure to security risk.

The interviewees noted how their organizations struggled with common challenges, including:

- **Excessive time needed to monitor deployed resources and cloud activity.** The interviewees noted their organizations' IT cloud teams lacked the ability to manage the growing number of cloud-based integrations effectively. Without adequate visibility of the entire cloud network, assessing unanticipated issues and accessing the data needed to resolve them was time- and resource-consuming.
- **Increasing costs to maintain legacy solutions.** The interviewees' organizations used a hybrid of solutions to manage their cloud-powered environments. However, these existing tools were limited and unable to accommodate the growing volume of ingested data. To manage, log, monitor, and store the increasing quantity of information effectively, the organizations required additional hardware, maintenance, and related internal resources, which were cost prohibitive.
- **Lack of flexibility and agility.** Absent the centralized visibility necessary to manage their cloud networks on-demand, IT teams lacked the flexibility to access data in real time and respond efficiently to unpredictable performance issues. Interviewees' organizations sought to democratize the management of data and share

> **"We needed to switch from on-premises to get the scalability we needed to develop a more democratized DevOps environment."**
>
> *Infrastructure team leader and security engineering manager, global energy*

access to appropriate IT-related business units, thereby reducing redundancy in IT tasks and encouraging collaboration and participation across departments.

SOLUTION REQUIREMENTS

The interviewees' organizations searched for a solution that could:

- Provide an external cloud-based solution that is scalable and cost-effective.
- Allow for customization of metrics, alerts, and user-friendly dashboards.
- Improve visibility for improved performance, auditing, and analytics.
- Offer better observability and disaster recovery capabilities.

COMPOSITE ORGANIZATION

Based on the interviews, Forrester constructed a TEI framework, a composite company, and an ROI analysis that illustrates the areas financially affected. The composite organization is representative of the four interviewees, and it is used to present the aggregate financial analysis in the next section. The composite organization has the following characteristics:

"We couldn't monitor the logs to the level needed to evaluate our existing suite of products. We needed to integrate with an external vendor to access our information effectively."

Senior product manager, IT cloud computing

Description of composite. The composite organization is an enterprise-sized company with global operations and annual revenue of $15 billion. It replaces its on-premises legacy solution with Google Cloud's operations suite, a more flexible cloud-based platform, to increase visibility, promote agility, and better manage its logging, monitoring, and storage functions across its cloud network.

Deployment characteristics. The composite organization experiences ingested data growth from 10 terabyte (TB)/day in Year 1 to 14 TB/day in Year 3, thereby needing a scalable, flexible solution. The composite employs 15 IT operations (ITOps) engineers on its cloud team and seeks efficiencies through data democratization and cost savings through the elimination of its legacy systems.

Key Assumptions

- **Enterprise organization with global operations**
- **On-premises legacy solution**
- **$15 billion annual revenue**
- **15 ITOps engineers on the cloud team**
- **ITOps efficiency gains of 20%**
- **10 TB/day ingested Year 1**

Analysis Of Benefits

Quantified benefit data as applied to the composite

Total Benefits						
Ref.	**Benefit**	**Year 1**	**Year 2**	**Year 3**	**Total**	**Present Value**
Atr	IT cloud team operations efficiency gains	$255,255	$255,255	$255,255	$765,765	$634,781
Btr	Reassignment of DevOps engineers to higher-level tasks	$654,500	$654,500	$654,500	$1,963,500	$1,627,645
Ctr	Consolidation of legacy tools	$4,325,760	$2,391,552	$2,807,424	$9,524,736	$8,018,258
	Total benefits (risk-adjusted)	$5,235,515	$3,301,307	$3,717,179	$12,254,001	$10,280,684

IT CLOUD TEAM OPERATIONS EFFICIENCY GAINS

Evidence and data. Google Cloud's operation suite provided the interviewees' organizations with a single, centralized view of all cloud-based deployments, enabling IT team members to better monitor ingested data and locate logs efficiently and on-demand.

- A Google Cloud Platform (GCP) manager in the telecommunications sector relayed: "We want information to be accessible to every engineer that needs it across the organization. With the operations suite, we can see all the common interfaces, so, in the event that we lose one of the circuits, the team that's pumping the data across knows the issue right away. They can see the alerts in real time."
- A senior product manager in IT cloud computing added: "Now, our team members have the ability to go and deep dive into their specific logs. And, at the same time, they don't have to worry about archived logs because those are maintained very nicely in the operations suite. We have better visibility, which allows for better understanding of errors and, therefore, an overall increase in the productivity of the team."

"As for seeing the inventory of what's running, Google does an awesome job. We get great top-down observability, and the tooling for the end engineers is much easier to use."

CEO, IT cloud cost optimization

Modeling and assumptions. For the financial analysis, Forrester assumes that:

- Fifteen ITOps engineers are assigned to the IT cloud team.
- The fully burdened, annual salary of an ITOps engineer is $100,100.
- The IT cloud team realizes an efficiency gain of 20% due to the adoption of Google Cloud's operation suite.

Risks. IT cloud team efficiency gains will vary with:

- The efficiency level of the ITOps team in the legacy environment.

- The size and industry of the organization, and the corresponding volume of data ingested daily.
- The organization's requirements for logging, monitoring, and storage.
- The salary level of ITOps engineers, depending on skill set and geographical location.

Results. To account for these risks, Forrester adjusted this benefit downward by 15%, yielding a three-year, risk-adjusted total PV (discounted at 10%) of $635,000.

IT Cloud Team Operations Efficiency Gains					
Ref.	**Metric**	**Source**	**Year 1**	**Year 2**	**Year 3**
A1	Number of ITOps engineers assigned to cloud team	Interviews	15	15	15
A2	Fully loaded annual salary of ITOps engineer	TEI standard	$100,100	$100,100	$100,100
A3	Percent efficiency gained due to Google Cloud operations suite	Interviews	20%	20%	20%
At	IT cloud team operations efficiency gains	A1*A2*A3	$300,300	$300,300	$300,300
	Risk adjustment	↓15%			
Atr	IT cloud team operations efficiency gains (risk-adjusted)		$255,255	$255,255	$255,255
	Three-year total: $765,765		**Three-year present value: $634,781**		

REASSIGNMENT OF DEVOPS ENGINEERS TO HIGHER-LEVEL TASKS

Evidence and data. The customization, configuration, and automation Google Cloud's operations suite provided significantly reduced the need for in-house developed solutions, previously required for cloud data management.

- The senior product manager in IT cloud computing stated: "Development costs have become almost minimal now because we don't need to develop anything in-house. We had a great development team creating these homegrown solutions, and now they're looking into more advanced aspects of the company's network."
- In-house DevOps engineers were no longer spending time collecting and aggregating metrics, as that function became automated. A CEO in IT cloud cost optimization commented: "The infrastructure guy is now able to go and focus on other more important things like our autoscaling policy and fine-tuning our databases. So, that for sure is a leverage point for us."

Modeling and assumptions. For the financial analysis, Forrester assumes that:

- Seven DevOps engineers are reassigned.
- The fully burdened, annual salary of a DevOps engineer is $110,000.

Risks. The reassignment of DevOps engineers to higher-level tasks will vary with:

- The size and industry of the organization.
- The nature of the legacy solution and its required maintenance and management.
- Salary levels, depending on skill set and geographical location.

Results. To account for these risks, Forrester adjusted this benefit downward by 15%, yielding a three-year, risk-adjusted total PV of $1.6 million.

Reassignment Of DevOps Engineers To Higher-Level Tasks

Ref.	Metric	Source	Year 1	Year 2	Year 3
B1	Number of DevOps engineers reassigned from previously maintained legacy solution	Interviews	7	7	7
B2	Fully loaded annual salary of a DevOps engineer	TEI standard	$110,000	$110,000	$110,000
Bt	Reassignment of DevOps engineers to higher-level tasks	B1*B2	$770,000	$770,000	$770,000
	Risk adjustment	↓15%			
Btr	Reassignment of DevOps engineers to higher-level tasks (risk-adjusted)		$654,500	$654,500	$654,500
	Three-year total: $1,963,500		**Three-year present value: $1,627,645**		

CONSOLIDATION OF LEGACY TOOLS

Evidence and data. Google Cloud's operation suite eliminated the need to continue investing in existing, on-premises infrastructure, which was costly to maintain and limited in functionality and capacity.

- A senior product manager in IT cloud cost optimization reported: "The replacement and maintenance costs would have been very high had we not transitioned to Google. Our team of seven might have increased to 10 or 12 people just to maintain our log activities."
- With the adoption of the operations suite, specific hardware and storage solutions were no longer necessary. An infrastructure team leader and security engineering manager at a global energy firm commented: "We moved our entire data center into the Google Cloud, so we wanted to ensure that we had the monitoring tools that were native and had the capabilities of monitoring our infrastructure. That is something that would not have been possible in our previous environment.

Modeling and assumptions. For the financial analysis, Forrester assumes that:

- The volume of data ingested per day is 10 TB in Year 1, 12 TB in Year 2, and 14 TB in Year 3.
- The cost per gigabyte (GB) of support and data center costs is $100.
- Monthly compute and monitoring costs in the previous environment total $40,000 in Year 1 and grow 20% annually.
- The volume of data ingested per day drives storage costs. To calculate the storage costs, Forrester assumes a 3-times compression factor on compute data, a 30-day lookback period for hot storage, and doubled infrastructure to maintain high availability (HA).
- The annual cost of storage per TB is $360 in Years 2 and 3. In Year 1, Forrester assumes the replacement of the on-premises solution in the cost of storage.
- The monthly cost of egress from the cloud is $7,200 in Year 1, $8,640 in Year 2, and $10,080 in Year 3.

Risks. The consolidation of legacy tools will vary with:

- The type of legacy solution.
- The volume of data ingested per day.
- Monitoring and storage requirements.
- Previous support and data center costs.
- Level of data access required.

Results. To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year, risk-adjusted total PV of $8 million.

> **"As we accelerate our transition to the cloud, we will be reducing or eliminating tooling saving us an estimated $10 million per year."**
>
> *Manager, GCP, telecommunications*

Consolidation Of Legacy Tools					
Ref.	**Metric**	**Source**	**Year 1**	**Year 2**	**Year 3**
C1	TB ingested per day in previous environment	Composite	10	12	14
C2	Conversion of TB to GB	C1*1,000	10,000	12,000	14,000
C3	Annual support and data center costs per GB	Assumption	$100	$100	$100
C4	Subtotal: License optimization	C2*C3	$1,000,000	$1,200,000	$1,400,000
C5	Monthly compute and monitoring costs	Composite	$40,000	$48,000	$57,600
C6	Subtotal: Annual compute and monitoring cost savings	C5*12	$480,000	$576,000	$691,200
C7	Volume of data stored in previous environment	C1*3x compression factor*30-day look back*2 HA	1,800	2,160	2,520
C8	Cost of storage per TB (inclusive of hardware, infrastructure, and maintenance)	Assumption	$1,800	$360	$360
C9	Subtotal: Reduced cost of storage (includes hardware every three years)	C7*C8	$3,240,000	$777,600	$907,200
C10	Monthly cost of egress from cloud	C2*30%*$0.08 per GB*30 days	$7,200	$8,640	$10,080
C11	Subtotal: Annual reduced cost of egress from cloud	C10*12 months	$86,400	$103,680	$120,960
Ct	Consolidation of legacy tools	C4+C6+C9+C11	$4,806,400	$2,657,280	$3,119,360
	Risk adjustment	↓10%			
Ctr	Consolidation of legacy tools (risk-adjusted)		$4,325,760	$2,391,552	$2,807,424
	Three-year total: $9,524,736		**Three-year present value: $8,018,258**		

UNQUANTIFIED BENEFITS

Interviewees mentioned the following additional benefits that their organizations experienced but were not able to quantify:

- **Enhanced security posture.** With better visibility and on-demand access to the growing volume of data, security operations (SecOps) teams could troubleshoot and resolve issues more easily and effectively, reducing outages and the corresponding potential for network security events. A security engineering manager in the global energy field commented, "With the tools in the operations suite, I can automate the collection of the logs into the threat detection feature, and Google enables the necessary telemetry."
- **Improved reporting and analytics.** Management created data displays with permissions, allowing specific teams or groups access to certain information. An infrastructure team leader mentioned, "We have a specific dashboard created that can be viewed by leadership so that they have a holistic view of what and where the resources are and how we are managing them."

  The dashboard also allowed teams to quickly view and analyze how data is accessed and used across the organization. A CEO in IT cloud cost optimization reported: "We can plug into the operations suite, pulling out the cloud monitoring and cloud logging pieces of the suite and show

management the uptime and utilization versus the cost. That's valuable."

- **Scalability.** Replacing their legacy, on-premises solutions with a cloud-based logging and monitoring platform, organizations could grow and adjust quickly and with little effort to the associated, increasing volume of data. An infrastructure team leader and security engineering manager at a global energy firm commented: "We started with 100 servers and integrated them all into Google Cloud's operations suite. After which, we were able to deploy the various tiers. The integration was nearly seamless. And now when we want to scale up, it doesn't require anything in terms of configuration, which would not have been the case before."

FLEXIBILITY

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

- **Simplified integration.** The interviewees reported that the adoption of Google Cloud's operations suite enabled their teams to integrate and deploy additional resources quickly and easily. An infrastructure team leader and security engineering manager in the global energy industry mentioned: "Whenever we integrate a new tier, there is not as much planning or configuration required. It's given us a real advantage in being able to deploy things in a faster manner." A CEO in IT cloud cost computing added, "We are more flexible from an architecture standpoint, because of how easy it has been to just keep everything there and use the operations suite features to monitor it."
- **Decentralized accessibility.** Google Cloud's operations suite gave the interviewees' organizations an easy-to-use interface that allowed participation across IT departments. By allowing other IT teams to access data required for their jobs, the ITOps team was freed up to perform higher-value tasks. The GCP manager at a telecommunications firm noted: "With the operations suite, we are showing all relevant teams how to use the UI and build their own data monitoring. It enables IT teams across the company to self-serve, taking data that has been siloed and opening it up so others that need it, can see it."

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

Analysis Of Costs

Quantified cost data as applied to the composite

Total Costs							
Ref.	**Cost**	**Initial**	**Year 1**	**Year 2**	**Year 3**	**Total**	**Present Value**
Dtr	Annual subscription fee	$0	$631,125	$757,350	$908,820	$2,297,295	$1,882,469
Etr	Initial and ongoing costs	$70,583	$889,643	$34,283	$34,283	$1,028,793	$933,441
	Total costs (risk-adjusted)	$70,583	$1,520,768	$791,633	$943,103	$3,326,088	$2,815,910

ANNUAL SUBSCRIPTION FEE

Evidence and data. The drivers for the pricing of logging and storage were TBs per day ingested and the cost per GB per day ingested. The cost of monitoring and metrics was determined according to the composite description and grows annually.

Modeling and assumptions. For the financial analysis, Forrester assumes that:

- TBs per day ingested equal 10 in Year 1, 12 in Year 2, and 14 in Year 3.
- The cost of Google Cloud's operations suite is $574,000 in Year 1, $689,000 in Year 2, and $826,000 in Year 3.

Risks. Annual subscription costs will vary with:

Data ingested per day:

10 TBs **Year 1** 12 TBs **Year 2** 14 TBs **Year 3**

- The volume of data ingested and the rate of growth.
- Logging, monitoring, and storage needs of the organization, depending on industry and size.

Results. To account for these risks, Forrester adjusted this cost upward by 10%, yielding a three-year, risk-adjusted total PV (discounted at 10%) of $1.9 million.

Annual Subscription Fee						
Ref.	**Metric**	**Source**	**Initial**	**Year 1**	**Year 2**	**Year 3**
D1	TB ingested per day	Composite		10	12	14
Dt	Annual subscription fee	Composite	$0	$573,750	$688,500	$826,200
	Risk adjustment	↑10%				
Dtr	Annual subscription fee (risk-adjusted)		$0	$631,125	$757,350	$908,820
	Three-year total: $2,297,295			**Three-year present value: $1,882,469**		

INITIAL AND ONGOING COSTS

Evidence and data. Internal DevOps engineers performed the initial implementation with the support of the Google support team. A GCP manager in the telecommunications industry commented: "It's an evolutionary tool. It's not a complex undertaking."

- A larger group of engineers received initial training.
- Ongoing costs included resources required to maintain the platform's health and future training needed by newly onboarded engineers.
- The interviewees' organizations maintained the legacy hardware for one year.

Modeling and assumptions. For the financial analysis, Forrester assumes that:

- Two DevOps engineers are 100% dedicated to the implementation for two months with a fully burdened annual salary of $110,000.
- Fifteen IT engineers across the composite organization receive initial training for 12 months at 20% time, earning a fully burdened, annual salary of $110,000. Two IT engineers are onboarded each year and require the same training.
- Ongoing management requires 25% time of one DevOps engineer.

> **"The upfront costs are generally labor, with no additional hardware or software necessary."**
>
> *Manager, GCP, telecommunications*

- The legacy system is maintained for one year, costing approximately $778,000.

Risks. Initial and ongoing costs will vary with:

- Complexity of implementation, depending on existing applications, cloud network, and legacy logging and monitoring tools.
- Salary levels, depending on existing skill sets and geographical location.
- Level of change management required.

Results. To account for these risks, Forrester adjusted this cost upward by 10%, yielding a three-year, risk-adjusted total PV of $933,000.

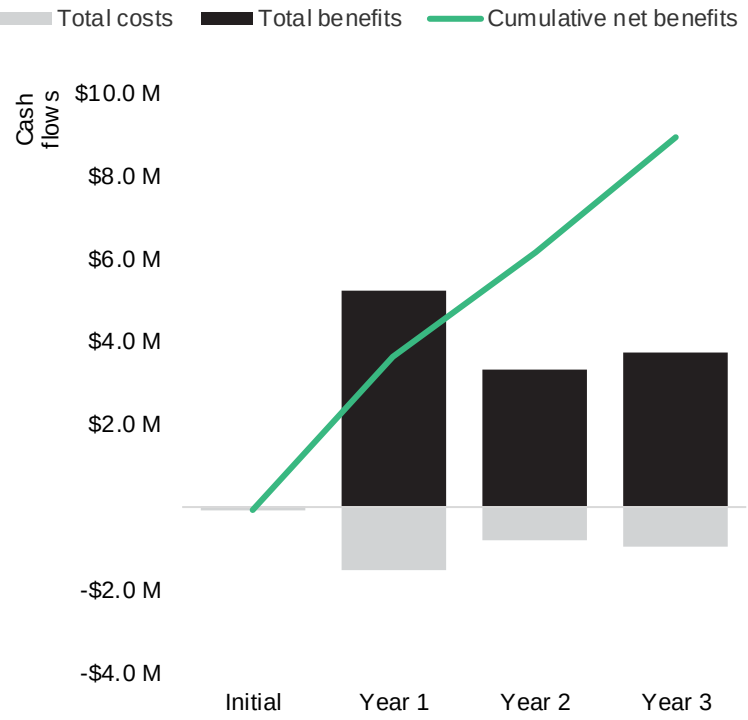
Initial And Ongoing Costs

Ref.	Metric	Source	Initial	Year 1	Year 2	Year 3
E1	Implementation costs	2 DevOps engineers*($110,000/12 months*2 months)*100%	$36,667			
E2	Initial training	15 engineers*$110,000 salary/12 months*20%	$27,500			
E3	Cost of maintaining servers for one year	C9	$0	$777,600		
E4	Ongoing management	1 DevOps engineer*$110,000*25%	$0	$27,500	$27,500	$27,500
E5	Ongoing training	2 engineers*$110,000 salary/12 months*20% time	$0	$3,667	$3,667	$3,667
Et	Initial and ongoing costs	E1+E2+E3+E4+E5	$64,167	$808,767	$31,167	$31,167
	Risk adjustment	↑10%				
Etr	Initial and ongoing costs (risk-adjusted)		$70,583	$889,643	$34,283	$34,283
	Three-year total: $1,028,793			**Three-year present value: $933,441**		

Financial Summary

CONSOLIDATED THREE-YEAR RISK-ADJUSTED METRICS

Cash Flow Chart (Risk-Adjusted)



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

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

Cash Flow Analysis (Risk-Adjusted Estimates)

	Initial	Year 1	Year 2	Year 3	Total	Present Value
Total costs	($70,583)	($1,520,768)	($791,633)	($943,103)	($3,326,088)	($2,815,910)
Total benefits	$0	$5,235,515	$3,301,307	$3,717,179	$12,254,001	$10,280,684
Net benefits	($70,583)	$3,714,747	$2,509,674	$2,774,076	$8,927,913	$7,464,774
ROI						265%
Payback period						<6 months

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] 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.


FORRESTER®