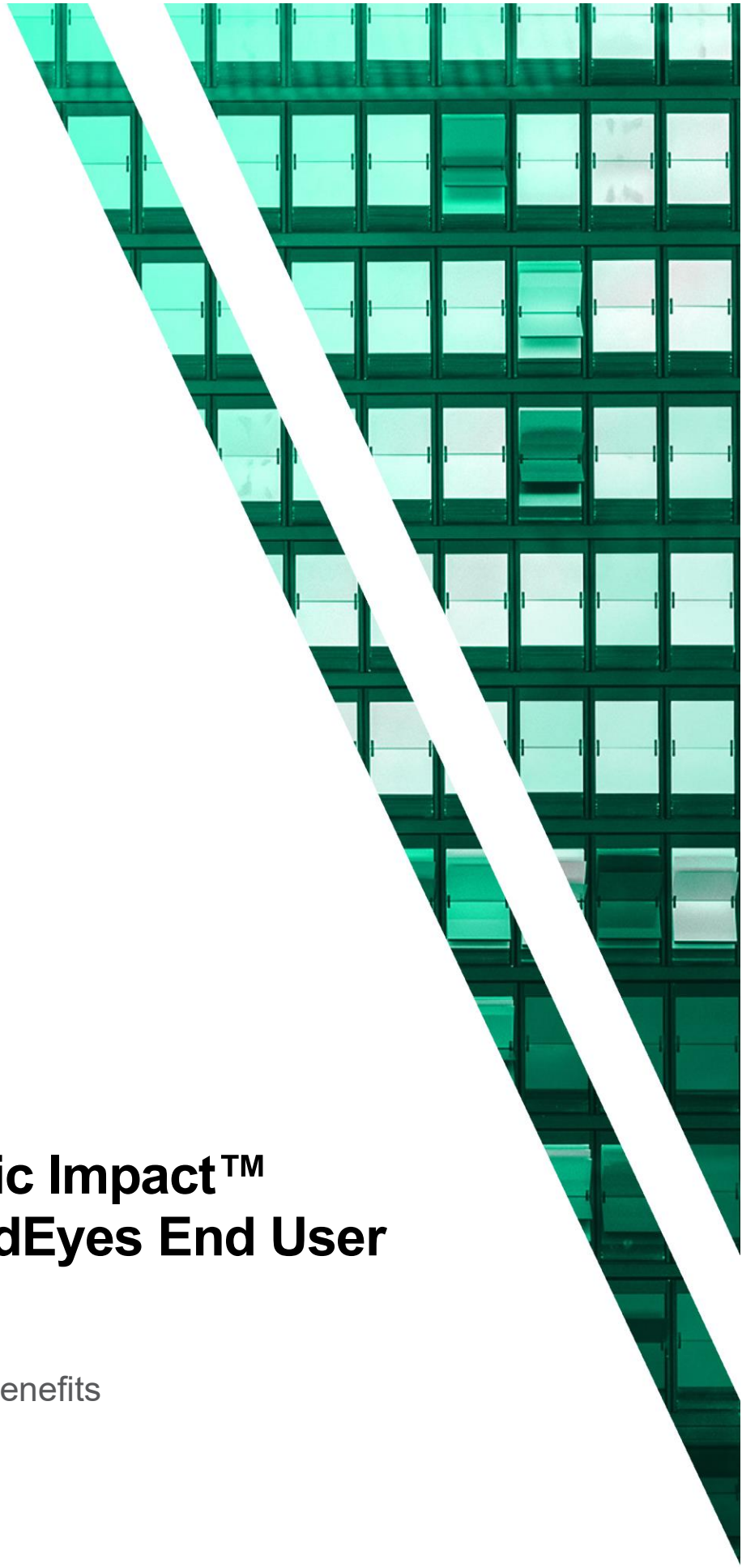
FORRESTER®



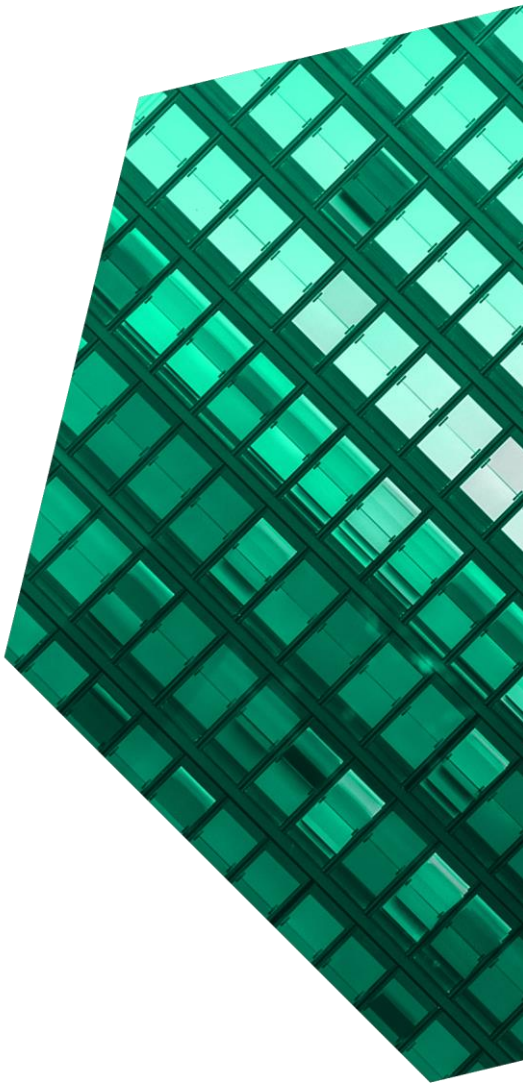
The Total Economic Impact™ Of Cisco ThousandEyes End User Monitoring

Cost Savings And Business Benefits Enabled By ThousandEyes

AUGUST 2022

Table Of Contents

Consulting Team: Erach Desai
Jonathan Lipsitz



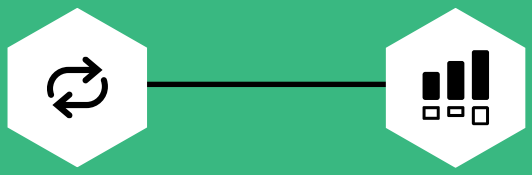
Executive Summary

Digital transformation and the shift to remote/hybrid work have resulted in a rapid shift toward cloud services, SaaS applications, and internet-enabled environments. For critical performance-degradation incidents, isolating the source of the problem between service providers, cloud services, SaaS applications, and end-user devices is time-consuming. Cisco ThousandEyes is an internet and cloud intelligence platform that enables I&O teams to identify problem domains, which improves productivity and business outcomes.

Cisco ThousandEyes is a software-as-a-service (SaaS)-based internet and cloud intelligence platform that enables infrastructure and operations (I&O) teams to proactively monitor internet-based networks, such as software-defined wide-area networks (SD-WANs) and secure access service edge (SASE), and the interaction with modern SaaS applications. With remote and hybrid work, the traditional enterprise wide-area network (WAN) has increasingly shifted its reliance to the internet — an unpredictable environment that is prone to performance degradation and outages. Understanding the global topology of the modern WAN requires internet-scale visibility, spanning internet service providers (ISPs), virtual private network (VPN) connections, content-delivery network (CDN) providers, and other interactions beyond the enterprise perimeter. Further complicating matters, most modern applications are cloud-native SaaS offerings that are containerized, running hundreds of microservices, and being dynamically updated.

When performance problems or outages occur, critical business services can grind to a halt, or there may be prolonged episodes of performance degradation for employees that can be global or localized. The time spent by NetOps and ITOps professionals to detect, identify, and resolve these incidents can be significantly disruptive to an enterprise's operations. Through vantage points deployed through the global internet, the enterprise environment and end users' edge devices,

KEY STATISTICS



Return on investment (ROI)
173%

Net present value (NPV)
$3.23M

ThousandEyes proactively monitors the global topology of the expanded WAN, enabling NetOps and ITOps to work together and quickly identify the source of critical outage and performance incidents.

Cisco commissioned Forrester Consulting to conduct a Total Economic Impact™ (TEI) study and examine the potential return on investment (ROI) enterprises may realize by deploying ThousandEyes.[1] The purpose of this study is to provide readers with a framework to evaluate the potential financial impact of ThousandEyes on their organizations. This TEI examines ThousandEyes End User Monitoring specifically for a remote and hybrid work use case. While there are other use cases for ThousandEyes internet and cloud intelligence, they are not the focus of this study.

To better understand the benefits, costs, and risks associated with this investment, Forrester interviewed five representatives with extensive experience using ThousandEyes. For the purposes of this study,

Forrester aggregated the interviewees' experiences and combined the results into a single composite organization, which is a global professional services company with 80% of employees working remotely and revenue of $1.5 billion per year.

Prior to using ThousandEyes, the composite organization was struggling to find monitoring solutions designed for end-user experience management. The composite organization previously utilized homegrown solutions that required a large amount of manual work (e.g., sifting through log reports) that was ineffective, reactive, and often led to lengthy war-room meetings with unproductive finger-pointing. I&O professionals had limited visibility into device and application performance issues. These limitations led to inefficient use of ITOps and NetOps resources.

After the investment in ThousandEyes, the composite organization is able to holistically visualize the map of the network with internet-scale visibility. Key results from the investment include real-time application performance and user experience data for SaaS applications, the ability to easily gather and visualize data across network layers and quickly identify the source for critical incidents, thereby eliminating time-intensive cross-functional meetings and troubleshooting cycles.

"I would say it's [deploying ThousandEyes] been very successful for us. The application is gaining a good name for itself around the enterprise. They have consistently been hitting the mark."

Sr. information security engineer, consumer financial institution

"I think it's worked out extremely well since our employees are successfully working from home, largely due to the ability for us to traverse the internet with ThousandEyes."

Director of network engineering, healthcare services provider

KEY FINDINGS

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

- **5.5% increase in hourly revenue productivity for remote revenue-generating employees.** ThousandEyes plays a central role in identifying the source of critical performance degradation incidents. The composite organization reduces its mean-time-to-identification (MTTI) of intermittent or degraded performance that is global (P1) or localized (P2) by 50% to 80%, depending on user experiences. Based on the hourly productivity of 6,000 remote, customer-facing employees, the composite organization achieves just over $3.2 million in revenue assurance value over three years.
- **6.9% increase in hourly productivity for remote, noncustomer-facing employees.** ThousandEyes plays an equally impactful role in reducing MTTI for P1 and P2 incidents for remote employees who are not customer-facing. Based on determining the hourly productivity of 2,000

remote, noncustomer-facing employees, the composite organization is able to extract just over $1.3 million in employee productivity over three years.

- **More than 50% reduction in time spent on incident management by I&O teams.** Prior to deploying ThousandEyes the composite organization's IT and networking teams were spending a great deal of unproductive time in war rooms, avoiding accountability, and struggling with inefficient tools. Using ThousandEyes results in a greater than 50% productivity boost for its ITOps and NetOps teams. Over three years, this benefit is valued at just over $550,000 for the composite organization.

"If you are monitoring the critical aspects of a system, you may start to see degradation long before any customers see a problem. For me, that's a proactive aspect of the use of ThousandEyes that's invaluable."

System integration engineer, global financial services firm

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

- **Impact on business-critical outages.** ThousandEyes plays an important role in reducing MTTI for outages (P0 incidents). However, interviewees were unable to isolate and quantify the specific contribution made by ThousandEyes in fully resolving P0 incidents.
- **Strategic use of I&O organizations.** ThousandEyes' user-friendly features and visualizations enabled interviewees' organizations to hire more or assign junior engineers to run ThousandEyes. Additionally, the proactive and preventative aspect of ThousandEyes enables I&O teams to address issues before they become user problems. This enables companies to leverage their most experienced resources for strategic projects and lower their cost structure.
- **Senior management visibility.** There was universal agreement that ThousandEyes has a very intuitive dashboard, mapping out the corporate network in a very easy-to-follow representation. In some cases, the dashboard became a compelling selling point to convince senior leadership to approve ThousandEyes as the organization's visibility vendor. I&O professionals were able to improve transparency with business leaders by sharing timely reports and dashboards during outage situations.

"Our main use case for ThousandEyes, literally, is like a microscope. You can put it on everything: a transaction, an application, a network. And, it lets us know what's actually going on."

Digital technology lead, diversified mining company

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

- **ThousandEyes licensing and services costs.** The composite organization pays an annual subscription cost of $521,300 based on standard pricing discounts for an organization of its size and deploying 8,000 Endpoint Agents coupled with a recommended number of Enterprise Agents and Cloud Agents. The one-time professional services fee of $50,000 is built into the pricing structure.
- **Initial and ongoing support expenses.** There are two components to these costs. The first is a nominal, up-front amount for the initial deployment of ThousandEyes of $25,000. The bulk of this expense category is ongoing in-production usage of ThousandEyes. Based on five FTEs spending 25% of their time on monitoring and using ThousandEyes for incident management, the composite spends $162,000 annually.

The representative interviews and financial analysis found that a composite organization experiences benefits of $5.09 million over three years versus costs of $1.86 million, adding up to a net present value (NPV) of $3.23 million and an ROI of 173%.

“It’s really about being able to reduce the downtime. We get paid based on transaction volumes. If agents aren’t able to work productively, they’re not generating that revenue. [We can resolve] an intermittent issue that would [have previously taken] two to three weeks to resolve … in a day or two by deploying ThousandEyes. That’s ultimately revenue for us.”

— Head of global network services, business process services provider

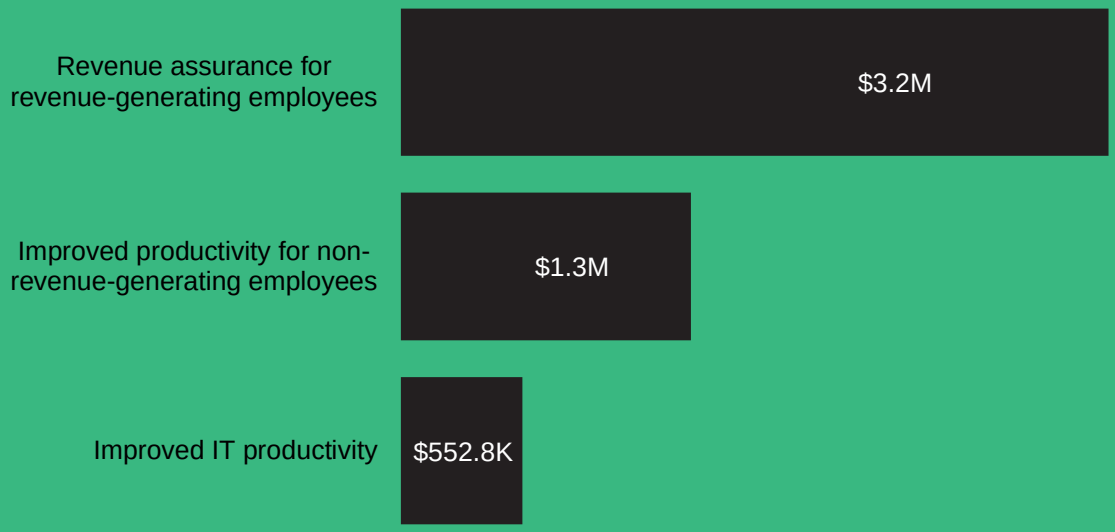
ROI
173%

BENEFITS PV
$5.09M

NPV
$3.23M

PAYBACK
<6 months

Benefits (Three-Year)



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 ThousandEyes.

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 ThousandEyes can have on an organization.

DUE DILIGENCE

Interviewed Cisco ThousandEyes stakeholders and Forrester analysts to gather data relative to ThousandEyes.

INTERVIEWS

Interviewed five representatives at organizations using ThousandEyes 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 Cisco ThousandEyes Customer Journey

Drivers leading to the ThousandEyes investment

Interviews

Role	Industry	Region	Headcount	Use Case
Director of network engineering	Healthcare services provider	US	50,000	Remote work during COVID-19 pandemic
System integration engineer	Consumer financial institution	US	50,000	Remote work during COVID-19 pandemic
Senior information security engineer	Financial services firm	Global	250,000	Enterprise monitoring
Digital technology lead	Diversified mining company	Global, based in APAC	25,000	Monitoring SaaS applications
Head of global network services	Business process services provider	Global	45,000	Remote work

KEY CHALLENGES

Forrester interviewed five IT decision-makers with experience evaluating, deploying, or overseeing the usage of ThousandEyes primarily for end-user monitoring in a remote work environment.

Prior to the deployment of ThousandEyes, interviewees' organizations were struggling to look for monitoring solutions to enhance end-user experience management. For two of the organizations, the remote work imperative spurred by the COVID-19 lockdowns accelerated their timelines to deploy off-the-shelf solutions. The three other organizations had deployed ThousandEyes prior to the lockdowns. These organizations had previously utilized homegrown solutions that required a large amount of manual work (e.g., sifting through log reports) that was ineffective and led to internal confusion and conflict.

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

- **Difficulties resolving outages and performance degradation, resulting in war rooms.** Interviewees said there was a significant gap in their organizations' network visibility prior to deploying ThousandEyes. Siloed teams were challenged to work together because everyone was looking at a different set of domain-specific data. These teams were wasting time by avoiding accountability and assigning blame, and thus ending up in unproductive, lengthy war rooms. Issues of performance degradation and outages took considerable time and effort, even to reach a consensus on the origin of these issues.

"Before ThousandEyes, there was really no visibility into the padding between points A and B on the internet once it left an enterprise's perimeter. The network [workers], the server team, [and] the SaaS vendor blamed each other. With ThousandEyes, we can look at the data and the network map and quickly identify the source of the problem."

System integration engineer, global financial services firm

- **With remote work, the internet becomes the new corporate network.** Interviewees cited a proliferation of SaaS solutions and internal applications crossing WAN and internet boundaries with no ability for real-time visibility into tracking performance issues, which drove spikes in IT tickets. With the proliferation of remote work, I&O professionals were grappling with the need to have end-to-end monitoring into a network that spanned beyond the enterprise to isolate where the problems might originate: at the ISP, CDN provider, VPN servicer, the SaaS provider, or with the end-user's device.
- **Limited visibility into device and application performance.** Interviewees said I&O professionals at their organizations lacked the tools to have a transparent view into end-user experiences. Existing tools and methods were unable to provide accurate information or a single view of detailed performance data for devices (usually employee laptops), applications, virtualization mechanisms, or networks. Therefore, disjointed information and a lack of an end-to-end network activity map prevented IT teams from identifying commonalties and root causes of common issues (usually related to degraded performance).
- **Inefficient use of ITOps and NetOps resources.** Interviewees said outages and performance degradation events used to take a long time to resolve. Some stated that their organization was unable to focus resources on scaling cloud services and maintaining performance in order to meet increasing traffic demands, especially with remote work. Other interviewees noted that alerts created by their organization's homegrown solutions were not helpful in diagnosing and solving the core problems. False positives were common, and they distracted resources from ITOps or NetOps staff.

SOLUTION REQUIREMENTS/INVESTMENT OBJECTIVES

The interviewees' organizations searched for a solution that could:

- Visually showcase the map of the network with internet-scale visibility.
- Provide real-time application performance and user-experience data for both internal and external SaaS applications.
- Visualize data across network layers, graphically display load times and webpage latency, and analyze waterfall charts to isolate sources of bottlenecks.
- Proactively deliver alerts on the performance of the holistic network — from the data center to the end-user workstation, including internet, VPN, and Wi-Fi.
- Be easy to deploy, scale, and maintain.

"We looked at several products: tools that provide visibility for the laptop [and] into the applications or [to] monitor the network. But there were no products that comprehensively provided visibility across the internet transport layer from our data centers to the service providers all the way to the remote user's laptop. This was a huge gap."

Director of network engineering, healthcare services provider

OUTAGES VS. PERFORMANCE DEGRADATION

In the world of incident management, there are service-level objectives (SLOs) and service-level agreements (SLAs) to delineate the severity of service quality and availability. Site-reliability engineering (SRE) teams triage the incoming alerts based on category and priority. In general, a P0 priority level is a complete loss of access to a given application or service. A P1 priority level is assigned for intermittent or degraded performance that is global in nature, while a P2 priority level is usually for degraded performance on a more localized level.

P0 priority issues, for all intents and purposes, are system outages that dramatically disrupt a company's business operations with profound revenue and reputation implications. While interviewees acknowledged that ThousandEyes played a role in dealing with P0 incidents, they also acknowledged that these incidents were "all hands (and tools) on deck" situations. Thus, it was challenging to isolate and quantify the specific contribution made by ThousandEyes in resolving P0 incidents, even though it had an impact in faster resolution of P0 incidents.

On the other hand, interviewees were more comfortable in quantifying the impact of ThousandEyes in the overall resolution of P1 and P2 level performance degradation incidents. Consequently, the analysis of benefits section will specifically distinguish between the impact of ThousandEyes for P1/P2 level performance degradation incidents.

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 five interviewees, and it is used to present the aggregate financial analysis in the next section. The composite organization has the following characteristics:

Description of composite. The composite is a global organization with $1.5 billion in annual revenue, providing business-process outsourcing (BPO) services for its customers. The services provided range from back-office operations to outsourcing call centers. In its prior state, the composite's global workforce was spread across 25 offices. The COVID-19 pandemic compelled the composite to support remote work for nearly all 10,000 employees, driving the need to deploy ThousandEyes for visibility across the network. In a hybrid-work world, the composite pares down office space, but not at the expense of the organization's global footprint. It is assumed that 80% of the composite's workforce will continue to be mostly remote.

Deployment characteristics. The composite organization prioritizes deploying ThousandEyes Endpoint Agents for all 8,000 remote employees, coupled with a recommended number of Enterprise Agents and Cloud Agents deployed across the organizational network. The goal for this extensive deployment is to ensure optimal productivity for all remote customer-facing agents, as well as to enhance productivity for noncustomer-facing employees.

Key Assumptions

- **$1.5 billion in revenues**
- **10,000 full-time employees**
- **80% remote workers post-pandemic**
- **6,000 customer-facing remote agents**
- **2,000 additional remote employees**

Key modeling assumptions. To quantify the productivity benefits the composite organization derives from the deployment of 8,000 ThousandEyes Endpoint Agents, Forrester used the following set of assumptions (that are calculated and summarized in the accompanying table):

- The 6,000 customer-facing remote agents are further classified as 1,500 sales agents and 4,500 services-delivery agents.
- On a linear basis, it is assumed that the 8,000 remote employees (80% of the workforce) generate $1.2 billion of the composite's overall revenues (80% of $1.5 billion).
- Therefore, the 4,500 services-delivery agents would be driving delivery of the entire $1.2 billion of revenue recognized during the year. Assuming linear productivity for each of these services-delivery agents, this computes to $128 of revenue generated per hour per remote-services delivery agent.
- On the sales generation side, it is assumed that the composite organization has 30% of recurring revenues per year. This is a book of business based on longer-term services contracts.
- Thus, the remote sales team (of 1,500) only needs to book an incremental $840 million of sales in any given year. Assuming linear productivity for each of these sales agents (for now), this computes to $269 of incremental sales bookings per hour per remote sales agent.

These hourly productivity metrics will be utilized in the Analysis Of Benefits section of the study to help quantify the economic impact of deploying ThousandEyes for faster MTTI, the source of performance degradation for the remote workforce experienced by the composite organization.

Analysis Of Revenue Productivity For Remote Customer-Facing Agents

Ref.	Metric	Source	Year 1	Year 2	Year 3
R1	Total number of employees	Composite	10,000	10,000	10,000
R2	Total number of remote employees	R1*80%	8,000	8,000	8,000
R3	Number of customer-facing remote agents	Composite	6,000	6,000	6,000
R4	Number of remote sales agents	Composite	1,500	1,500	1,500
R5	Number of remote services delivery agents	Composite	4,500	4,500	4,500
R6	Number of noncustomer-facing remote employees	R2-R3	2,000	2,000	2,000
R7	Total annual revenues	Composite	$1.5 billion	$1.5billion	$1.5 billion
R8	Revenue generated by remote agents	R7*80%	$1.2 billion	$1.2 billion	$1.2 billion
R9	Recurring revenues – remote sales agents	R8*30%	$360 million	$360 million	$360 million
R10	Incremental new sales – remote sales agents	R8-R9	$840 million	$840 million	$840 million
R11	Revenue per sales agent per hour	R10/R4/2,080 hours	$269	$269	$269
R12	Revenue per services delivery agent per hour	R8/R5/2,080 hours	$128	$128	$128

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	Revenue assurance for revenue-generating employees	$1,294,674	$1,294,674	$1,294,674	$3,884,021	$3,219,662
Btr	Improved productivity for nonrevenue-generating employees	$530,064	$530,064	$530,064	$1,590,192	$1,318,191
Ctr	Improved IT productivity	$222,300	$222,300	$222,300	$666,900	$552,827
	Total benefits (risk-adjusted)	$2,047,038	$2,047,038	$2,047,038	$6,141,113	$5,090,680

REVENUE ASSURANCE FOR REVENUE-GENERATING EMPLOYEES

Evidence and data. Three of the five interviewees cited how deploying ThousandEyes enabled their organizations to significantly reduce MTTI for performance-degradation incidents (P1 and P2 priority). In one study about data breaches it was estimated that companies across industries spent 74% of overall mean-time-to-resolution (MTTR) in identifying the source of the problem (MTTI), typically for non-P0 incidents.[2] All interviewees were also emphatic in stating that ThousandEyes was essential to help quickly identify the source of the problem, thus enabling I&O teams to focus on remediating the right issues.

- The head of global network services for a business process services provider cited examples of how it used to take two to three weeks to resolve an intermittent performance issue that might be regionally isolated. Once their organization installed ThousandEyes and it gathered information in deployment, the source of these kinds of problems was usually identified within two days. In his assessment, deploying ThousandEyes resulted in upwards of an 80% reduction in MTTI for P1 and P2 incidents that impacted the productivity of the organization's customer-facing remote employees.

> **"Any lost calls — especially during enrollment periods — is lost business for us. In the case of the CDN provider having latency and packet-loss issues, it took them about three to four days to solve that problem. Having ThousandEyes enabled us to know where the problem was and reroute traffic from that connection point, thus avoiding that potential loss of business."**
>
> *Director of network engineering, healthcare services provider*

- The director of network engineering for a healthcare services provider cited the issue with a CDN partner. Before deploying ThousandEyes,

it might have taken upwards of four to six days to isolate the issue that was causing latency and packet-loss problems. With ThousandEyes, the organization was able to quickly identify that the issue was not a network issue, but with the CDN provider used by its customer — usually in one to two days. Based on before-and-after timeframes, ThousandEyes improved MTTI by 50% to 75% with similar issues.

- The senior information security engineer for a global financial services firm used the example of his organization's online banking system to illustrate the proactive aspects of ThousandEyes. He said: "If you are monitoring the critical aspects of that system, you may start to see degradation long before any customers see a problem. To me, that's a proactive and preventative aspect of ThousandEyes. And, usually, folks are able to address it now before it becomes a user problem."

Deploying ThousandEyes boosts revenue assurance for remote customer-facing employees by

5.5%

- Interviewees were able to provide estimates of the number of prolonged performance degradation incidents. The director of network engineering for a healthcare services provider suggested a frequency of 20 to 25 such incidents in any given year. Others estimated such P1/P2 incidents to be about one to two per month. In general, such incidents impacted about 20% to 30% of overall employees; usually 100% within a specific geography or region. However, in the case of external SaaS applications, latency issues or performance degradation could apply to the entire workforce.

Modeling and assumptions. The focus on this benefit is the revenue assurance of the 6,000 customer-facing remote agents: 1,500 sales agents and 4,500 services delivery agents. For the composite organization, Forrester assumes:

- The deployment of ThousandEyes reduces MTTI for performance degradation incidents (P1/P2) by 75%: from eight days to two days.
- Forrester conservatively assumes the composite organization experiences one such incident per month, or 12 such incidents per year.
- Any such event impacts 10% of the remote agents. And the productivity impact on any remote agent is 20%, based on the assumption that these remote employees are still able to function.
- For remote sales agents, it is estimated that only half (50%) of potential incremental sales bookings would be lost during these incidents. The logic being that sales agents would work harder when the issue has been resolved to make up for any potential loss of opportunity.
- Sales agents drive $269 in incremental sales per hour, while services delivery agents deliver $128 in revenue per hour.
- To determine the net business impact for the composite, the revenue benefit is converted into net profits. The model assumes a net margin of 17% for the business-process services outsourcing industry.

Risks. Forrester recognizes that these results may not be representative of all experiences, and the benefit will vary between organizations depending on:

- The percentage of the workforce and, specifically, the number of customer-facing agents who work remotely.

- The hourly revenue and sales generation benefit, which will depend on the industry and any given company's business model.
- Net margins, which vary by industry, company, and types of products and services sold.

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 $3.2 million.

Revenue Assurance For Revenue-Generating Employees

Ref.	Metric	Source	Year 1	Year 2	Year 3
A1	Total hours of performance degradation per incident - before	8 days to identify * 8 hours/day	64	64	64
A2	Total hours of performance degradation per incident - after	2 days to identify * 8 hours/day	16	16	16
A3	Number of incidents per year	Interviews	12	12	12
A4	Productivity impact per incident	Interviews	20.0%	20.0%	20.0%
A5	Average number of remote sales agents impacted per incident	R4*10%	150	150	150
A6	Revenue per sales agent per hour	R11	$269.00	$269.00	$269.00
A7	Percent of sales potentially lost per incident	Interviews	50.0%	50.0%	50.0%
A8	Subtotal: Revenue assurance by faster time to identify and investigate for sales agents	(A1-A2)*A3*A4*A5*A6	$2,324,160	$2,324,160	$2,324,160
A9	Average number of remote services delivery agents impacted per incident	R5*10%	450	450	450
A10	Revenue per services delivery agent per hour	R12	$128.00	$128.00	$128.00
A11	Subtotal: Revenue assurance by faster time to identify and investigate for services delivery agents	(A1-A2)*A3*A4*A8*A9	$6,635,520	$6,635,520	$6,635,520
A12	Net margin	Composite	17.0%	17.0%	17.0%
At	Revenue assurance for revenue-generating employees	(A7+A10)*A11	$1,523,146	$1,523,146	$1,523,146
	Risk adjustment	↓15%			
Atr	Revenue assurance for revenue-generating employees (risk-adjusted)		$1,294,674	$1,294,674	$1,294,674
	Three-year total: $3,884,021		**Three-year present value: $3,219,662**		

IMPROVED PRODUCTIVITY FOR NONREVENUE-GENERATING EMPLOYEES

Evidence and data. The evidence and data for this benefit, which is focused on remote employees who are not directly responsible for generating revenues (or booking sales), closely track the information cited for the first benefit. Most of the interviewees stated that deploying ThousandEyes enabled their organizations to significantly reduce MTTI for performance degradation incidents (P1 and P2 priority). The consistent message was that ThousandEyes was critical in quickly identifying the

source of the problem, which enabled I&O professionals to focus on remediating the key issues.

- The head of global network services for a business process services provider said deployment of ThousandEyes resulted in upwards of an 80% reduction in MTTI for P1 and P2 incidents for remote employees, which was similar to that for customer-facing agents.
- The director of network engineering for a healthcare services provider gave examples of degraded performance (P1 and P2) incidents where ThousandEyes helped to improve MTTI by 50% to 75%. He further estimated that due to the proactive nature of ThousandEyes, their organization is likely totally avoiding about 10% of overall performance degradation incidents, especially for customized internal applications.
- The digital technology lead for a diversified mining company used the example of his team's experience with a popular document-sharing SaaS application to illustrate the analytical capabilities of ThousandEyes. He said: "We started with a round-trip latency of about 900 milliseconds, which was not at all ideal. We were able to do a detailed analysis of data and network traffic flow, down to DNS settings, etc. We went from about 900 to about 55 to 65 milliseconds." While employees were not left helpless or ineffective during this prolonged period of resolving the issue, the full network visibility offered by ThousandEyes enabled his operation to regain more than 90% efficiency for this singular application.

Modeling and assumptions. The focus on this benefit is the day-to-day productivity of the 2,000 noncustomer-facing remote employees. For the composite organization, Forrester assumes:

- The deployment of ThousandEyes reduces MTTI for performance degradation incidents (P1/P2) by 75%: from eight days to two days.
- The composite organization experiences 15 such incidents per year. This is estimated to be slightly higher for noncustomer-facing employees who are more likely to use customized, internal applications.
- Any such event impacts 10% of the remote employees. And the productivity impact on any remote agent is 20%, based on the assumption

"Talking to nontechnical people and trying to understand their problem can sometimes have our IT team running in circles, especially in a work-from-home setting. Having a tool like ThousandEyes allows our I&O professionals to visualize the users' experience. What would take two to three weeks to resolve because it was intermittent, we can now resolve in a day or two."

Head of global network services, business process services provider

Deploying ThousandEyes improves productivity for remote non-customer-facing employees by

6.9%

that these remote employees are still able to function.

- The fully burdened annual salary for the average nonrevenue-generating employee is $85,000. This is based on industry data for business-process outsourcing companies, where a sizable percentage of the workforce is not US-centric. This computes to $40.90 per hour for the average remote employee.
- The productivity adjustment factor represents the percentage productivity savings captured for productive work. Forrester recommends that a 50% productivity capture is applied because not all time saved translates into additional work being completed.

Risks. Forrester recognizes that these results may not be representative of all experiences, and the benefit will vary between organizations depending on:

- The percentage of the workforce and, specifically, the number of remote employees.
- The hourly salary, which will depend on the company's industry and business model.

Results. To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year, risk-adjusted total PV (discounted at 10%) of $1.3 million.

Improved Productivity For Nonrevenue-Generating Employees

Ref.	Metric	Source	Year 1	Year 2	Year 3
B1	Total hours of performance degradation per incident - before	8 days to identify * 8 hours/day	64	64	64
B2	Total hours of performance degradation per incident - after	2 days to identify * 8 hours/day	16	16	16
B3	Number of incidents per year	Interviews	15	15	15
B4	Productivity impact per incident	Interviews	20.0%	20.0%	20.0%
B5	Average number of remote employees impacted per incident	R6*10%	200	200	200
B6	Cost per remote employee per hour	Composite	$40.90	$40.90	$40.90
B7	Improved remote employee productivity (un-adjusted)	(B1-B2)*B3*B4*B5*B6	$1,177,920	$1,177,920	$1,177,920
B8	Productivity adjustment factor	Forrester research	50%	50%	50%
Bt	Improved productivity for non-revenue-generating employees	B7*B8	$588,960	$588,960	$588,960
	Risk adjustment	↓10%			
Btr	Improved productivity for nonrevenue-generating employees (risk-adjusted)		$530,064	$530,064	$530,064
	Three-year total: $1,590,192		**Three-year present value: $1,318,191**		

IMPROVED IT PRODUCTIVITY

Evidence and data. Interviewees said that prior to deploying ThousandEyes, their organizations' IT and networking teams were spending a great deal of unproductive time in war rooms and avoiding accountability based on limited visibility into the network and lacking tools to identify the source of incidents. Service-desk employees used to spend time chasing large volumes of IT tickets, while using ineffective tools to diagnose performance-degradation incidents. Almost all interviewees cited improved productivity of their organization's service desk and/or IT operations as a key benefit of deploying ThousandEyes.

- The senior information security engineer for a consumer financial institution said, "Multiple groups in the company were having issues troubleshooting because of lack of visibility." He elaborated that it used to take one to two full days for an engineer on the service desk to tackle a medium-priority ticket. That would often get escalated to also involve a NetOps engineer for another full day to resolve. With ThousandEyes deployed, the same ticket typically takes an ITOps engineer 2 to 3 hours to resolve. He said, "Based on my experience as a network engineer, I can diagnose a problem four times faster with ThousandEyes because of the data that I'm provided."

Deploying ThousandEyes reduces time spent by ITOps and NetOps teams on P1/P2 incidents by

50% or more

"With ThousandEyes, we are able to identify situations where there's service degradation before there's a failure that the customer can see. Instead of being customer alerted and then triaging the problem, we get to it before the customer even notices a problem."

System integration engineer, global financial services firm

- The head of global network services for a business-process services provider described the before-and-after scenario for an engineer tackling a performance degradation incident. He said: "We have two weeks or a month where I have an engineer getting on a call every so often during that interval, just sitting there twiddling their thumbs [and] trying to help troubleshoot the problem. With ThousandEyes deployed, that same engineer is getting it resolved in two days or less. They're no longer spending all that time unproductively and can be working on other issues. It's a huge reduction in my resources." Asked how ThousandEyes may have saved ITOps and NetOps resources, he estimated that the efficiency of ThousandEyes for isolating issues quickly could be saving his organization from hiring six to seven FTEs – relative to a team of more than 30 ITOps and NetOps FTEs. Pragmatically, his organization is able to hire more junior engineers to run ThousandEyes, and its most experienced resources can be leveraged for the most critical and strategic issues.
- Interviewees noted how ThousandEyes plays a critical role in reducing MTTI for all incidents,

including P0 outages. They noted that using ThousandEyes in conjunction with complementary tools (e.g., for application performance monitoring or observability) likely results in a productivity boost for ITOps and NetOps. This is a boost that is well in excess of the 50% productivity gain estimates or more for P1/P2 incidents that can be specifically attributed to ThousandEyes. Because interviewees were not able to isolate the specific productivity boost provided by ThousandEyes for P0 outages, the model does not reflect that benefit.

Modeling and assumptions. For the composite organization, Forrester assumes:

- The combined size of the ITOps and NetOps team focused on incident management for the remote workforce consists of 12 FTEs.
- Prior to the usage of ThousandEyes, the incident management team spent about 40% of its time on high-priority (P1/P2) incidents.
- Deployment of ThousandEyes reduces the time to identify and investigate performance degradation incidents (P1/P2) by 50%.
- The fully burdened annual salary for the average ITOps or NetOps employee is $135,000. These experienced professionals are primarily based in the US.
- Forrester recommends that a 75% productivity capture is applied for a specialized team of professionals. While not all time saved translates into additional work being completed, these teams are typically run as 24/7 operations.

Risks. Forrester recognizes that these results may not be representative of all experiences, and the benefit will vary between organizations depending on:

- The size of the remote workforce and the related size of the ITOps and NetOps team dedicated for incident management.
- The time savings derived which, will likely depend on the prior state of technology and tools utilized for dealing with P1/P2 incidents.

Results. To account for these risks, Forrester adjusted this benefit downward by 5%, yielding a three-year, risk-adjusted total PV (discounted at 10%) of $550,000.

Improved IT Productivity

Ref.	Metric	Source	Year 1	Year 2	Year 3
C1	Number of ITOps and NetOps professionals	Composite	12	12	12
C2	Percentage of time spent on high priority incidents - before ThousandEyes	Interviews	40.0%	40.0%	40.0%
C3	Percentage of time spent on high priority incidents - after ThousandEyes	C2*50%	20.0%	20.0%	20.0%
C4	Fully burdened ITOps/NetOps cost	TEI Standard	$130,000	$130,000	$130,000
C5	Productivity adjustment factor	Forrester research	75%	75%	75%
Ct	Improved IT productivity	C1*(C2-C3)*C4*C5	$234,000	$234,000	$234,000
	Risk adjustment	↓5%			
Ctr	Improved IT productivity (risk-adjusted)		$222,300	$222,300	$222,300
	Three-year total: $666,900			**Three-year present value: $552,827**	

UNQUANTIFIED BENEFITS

Additional benefits that customers experienced but were not able to quantify include:

- **Impact on business-critical outages.** Broad-based system outages dramatically disrupt a company's business operations with profound revenue and reputation implications. Interviewees acknowledged that ThousandEyes played an important role in reducing MTTI with P0 incidents. However, they also noted that these incidents were "all hands on deck" situations, which makes it challenging to isolate and quantify the specific contribution made by ThousandEyes in fully resolving P0 incidents.
- **Strategic use of I&O organizations.** The head of global network services for a business-process services provider stated how his organization was able hire more junior engineers to run ThousandEyes given its usability and productivity aspects, while leveraging the most experienced resources towards strategic projects. The system integration engineer for a global financial services firm noted that the proactive and preventative aspect of ThousandEyes enables their organizations I&O team to address issues before they become user problems. In a sense, ThousandEyes is enabling the broader trend towards ITOps shifting from a cost center to a business-productivity unit.
- **Senior-management visibility.** Many interviewees said one of the compelling features of ThousandEyes is its intuitive interface, which they said is a very easy-to-follow graphical representation of the network that shows where problems might lie. One interviewee stated that the interface and dashboard drove the decision to go with ThousandEyes because senior leadership (including executive leadership) was impressed with how the complexity of the network was displayed.

"A key selling point for ThousandEyes was how easy it was to show leadership or nontechnical people a graphic representation of the network. Other tools were data-heavy and not visually oriented. ThousandEyes really hit the nail on the head."

Senior information security engineer, consumer financial institution

"With ThousandEyes, we were able to establish trends from a network and an application provisioning perspective for our customers. It has allowed us to do something that we had never had the ability to quantify before. That's sort of invaluable."

System integration engineer, global financial services firm

FLEXIBILITY

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

- **Enhanced partnership with SaaS application vendors.** ThousandEyes provides the key benefit

of quickly identifying the source of a performance-degradation incident. Many interviewees cited examples of how isolating the issue down to a specific SaaS application actually resulted in a more collaborative relationship. They were able to efficiently provide the evidence to the vendor, and the vendor was able to deploy its own set of application performance tools to remediate the issue at hand.

- **Leveraging security use cases.** One interviewee stated that the initial decision to select ThousandEyes was for its security benefits as opposed to application or service-layer monitoring — specifically related to monitoring the effectiveness of mitigation strategies when denial of service or internet-based attacks were on the rise. This is a separate, but applicable use case for ThousandEyes.

Flexibility would also be quantified when evaluated as part of a specific project (described in more detail in Appendix A). None of these flexibility benefits are included in the financial analysis.

"As we got more accustomed to using the tool, we found that we could do application monitoring with it. For us, ThousandEyes has become a mainstay in the toolset and the playbooks for the performance management of online banking and several other crown-jewel applications."

System integration engineer, global financial services firm

"ThousandEyes has helped us rapidly resolve 80% of our internally generated IT tickets."

Senior information security engineer, consumer financial institution

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	ThousandEyes licensing and services costs - external	$52,500	$547,344	$547,344	$547,344	$1,694,532	$1,413,664
Etr	Initial and ongoing support expenses - internal	$26,250	$170,625	$170,625	$170,625	$538,125	$450,569
	Total costs (risk-adjusted)	$78,750	$717,969	$717,969	$717,969	$2,232,657	$1,864,233

THOUSANDEYES LICENSING AND SERVICES COSTS - EXTERNAL

Evidence and data. Interviewees stated that their companies paid annual subscription (or SaaS) licensing fees for ThousandEyes.

- Pricing for ThousandEyes is based on a combination of Enterprise Agents and Cloud Agents (units) and Endpoint Agents (users).
- In general, each remote employee's primary device (laptop) would be configured with a ThousandEyes Endpoint Agent.
- While this analysis is focused on the remote work use case, for any ThousandEyes configuration to be most useful, it is normal to have additional Enterprise Agents and Cloud Agents deployed across a company's network and spanning the internet.
- Interviewees said Cisco provided professional services assistance during the implementation phase as part of the configuration package.

Modeling and assumptions. For the composite organization Forrester assumes.

- The annual cost of the ThousandEyes configuration is for 8,000 Endpoint Agents and a recommended number of Enterprise Agents and Cloud Agents.
- The annual subscription cost includes standard pricing discounts for a company that has the revenues and headcount of the composite.
- Pricing may vary. Contact Cisco for additional details.

Risks. Forrester recognizes that these results may not be representative of all experiences, and that the costs will vary between organizations depending on the following factors:

- The size of the organization, specifically the number of Enterprise Agents, Cloud Agents, and Endpoint Agents for the configuration.
- Whether the organization decides to purchase Endpoint Agents for all remote employees or only for customer-facing representatives.

Results. To account for these risks, Forrester adjusted this cost upward by 5%, yielding a three-

year, risk-adjusted total PV (discounted at 10%) of $1.4 million.

ThousandEyes Licensing and Services Costs - External

Ref.	Metric	Source	Initial	Year 1	Year 2	Year 3
D1	Professional services - implementation	Composite	$50,000			
D2	ThousandEyes licensing: Recommended endpoint and additional enterprise/cloud test units	Composite		$521,280	$521,280	$521,280
Dt	ThousandEyes licensing and services costs - external	E1+E2	$50,000	$521,280	$521,280	$521,280
	Risk adjustment	↑5%				
Dtr	ThousandEyes licensing and services costs - external (risk-adjusted)		$52,500	$547,344	$547,344	$547,344
	Three-year total: $1,694,532		**Three-year present value: $1,413,664**			

INITIAL AND ONGOING SUPPORT EXPENSES - INTERNAL

Evidence and data. Interviewees consistently stated that their companies were able to quickly deploy ThousandEyes in production usage.

- The senior information security engineer with a financial service firm said: “ThousandEyes requires absolutely no infrastructure investment or anything on our premises whatsoever. It is browser-based.” He estimated that the initial deployment likely involved an IT group of five FTEs, spending about one to two weeks for the organization’s specific global configuration of ThousandEyes.
- The director of network engineering for a healthcare services provider that supported 50,000 employees for remote work during the COVID-19 pandemic stated that his firm likely spends about half a million dollars each year for ITOps engineers dedicated to ThousandEyes.
- The head of global network services for a business process services provider estimated that about a total of 10 of his organization’s ITOps and NetOps engineers spend about 25% to 33% of their time monitoring ThousandEyes dashboards, including tracking down performance degradation incidents, etc.

Modeling and assumptions. To reflect the interviewees’ experiences, Forrester assumes the following about the composite organization:

- For the initial deployment, the composite organization utilizes five FTEs over two weeks. This is likely at the higher end of time required for the configuration.
- For ongoing, in-production usage, the composite utilizes five FTEs, who spend 25% of their time dedicated to monitoring and using ThousandEyes for incident management.
- The fully burdened annual salary for the average ITOps or NetOps employee is assumed to be $135,000.

Risks. Forrester recognizes that these results may not be representative of all experiences, and that the costs will vary between organizations depending on the following factors:

- The size of the organization and the specific configuration of the ThousandEyes deployment.

- The relative expertise of the ITOps and NetOps professionals.

Results. To account for these risks, Forrester adjusted this cost upward by 5%, yielding a three-year, risk-adjusted total PV (discounted at 10%) of $450,000.

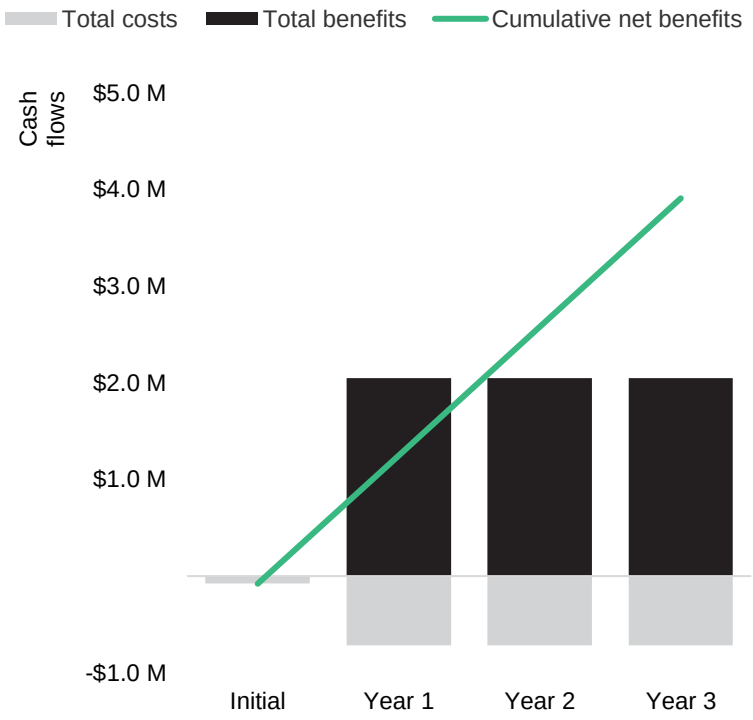
Initial And Ongoing Support Expenses - Internal

Ref.	Metric	Source	Initial	Year 1	Year 2	Year 3
E1	ThousandEyes - initial deployment (hours)	10 days * 8 hours/day	80			
E2	Deployment - FTEs	Interviews	5			
E3	Fully burdened ITOps/NetOps cost per hour	TEI Standard	$62.50			
E4	ThousandEyes - ongoing support - FTEs	5 FTEs x 25% of time		1.25	1.25	1.25
E5	Fully burdened ITOps/NetOps cost	TEI Standard		$130,000	$130,000	$130,000
Et	Initial and ongoing support expenses - internal	(D1*D2)+(D3*D4*D5)	$25,000	$162,500	$162,500	$162,500
	Risk adjustment	↑5%				
Etr	Initial and ongoing support expenses - internal (risk-adjusted)		$26,250	$170,625	$170,625	$170,625
	Three-year total: $538,125			**Three-year present value: $450,569**		

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	($78,750)	($717,969)	($717,969)	($717,969)	($2,232,657)	($1,864,233)
Total benefits	$0	$2,047,038	$2,047,038	$2,047,038	$6,141,113	$5,090,680
Net benefits	($78,750)	$1,329,069	$1,329,069	$1,329,069	$3,908,456	$3,226,447
ROI						173%
Payback						<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.

[2] Source: Rob Sobers, "Data Breach Response Times: Trends and Tips," Varonis, June 17, 2020.


FORRESTER®