

A Forrester Total Economic Impact™
Study Commissioned By ASG
August 2017

The Total Economic Impact™ Of ASG- TMON Performance Analyzer

Cost Savings And Business Benefits
Enabled By ASG-TMON Performance
Analyzer

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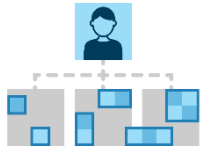
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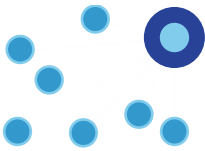
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Executive Summary

Benefits And Costs



Increased productivity:
\$2.1 million



Optimization of IT infrastructure:
\$122,000

“ASG-TMON Performance Analyzer helps us to keep our infrastructure costs down so we can do more with less.”

*Performance and capacity engineer,
industrial manufacturing company*



Software licensing and maintenance fees:
\$652,000

The emergence of inexpensive server technology and cloud infrastructure has caused many IT organizations to neglect accurate workload and resource planning efforts. But the multiplication of servers has led to other issues such as increased costs of infrastructure administration and data center resources. Server consolidation, fueled by virtualization and different forms of clouds, appeared as a potential solution but quickly necessitated a better understanding of virtualization requirements to provide the quality of service expected by businesses. Virtualization is dependent on properly managing and planning capacities in networks, storage, and computing power, and the financial advantages of cloud depend on your ability to successfully plan the capacity required to run your applications. Having clear and timely reporting capabilities reduces risk and ensures a consistent service delivery. Thorough performance management and capacity planning practices are key to running an efficient, stable, and agile infrastructure.

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

ASG-TMON Performance Analyzer is a performance management and capacity planning tool providing a single point of control to manage Windows, Unix, Linux, and z/Architecture environments. To better understand the benefits, costs, and risks associated with an ASG-TMON Performance Analyzer implementation, Forrester interviewed four customers with multiple years of experience using ASG-TMON Performance Analyzer.

Key Findings

Quantified benefits. The following risk-adjusted quantified benefits are representative of those experienced by the companies interviewed:

- › **Improved productivity.** ASG-TMON Performance Analyzer allowed the interviewed organizations to manage their servers with a team that is five to 10 times smaller. The freed-up resources could be reallocated to other tasks. For the composite organization (discussed in detail later in this study), this has an estimated three-year risk-adjusted present value (PV) of approximately \$2.1 million.
- › **Optimization of IT infrastructure for existing applications.** By being able to analyze historical performance data and predict future needs of resources, the composite organization downsizes the infrastructure for a number of existing applications. The estimated cost savings have a three-year risk-adjusted PV of approximately \$122,000 in this case.
- › **Storage cost savings.** Due to more accurate predictions with regard to actual storage area network (SAN) storage requirements, the composite organization saves 10 TB of storage capacity per year. The resulting storage cost savings have an estimated three-year risk-adjusted PV of approximately \$85,000.



ROI
179%



Benefits PV
\$2.4 million



NPV
\$1.5 million



Payback
11 months

- › **Avoidance of overprovisioning for new workloads.** Whenever new workloads were introduced, the composite organization does a better job of right-sizing the corresponding infrastructure. The capex and opex savings have an estimated three-year risk-adjusted PV of \$61,000.

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

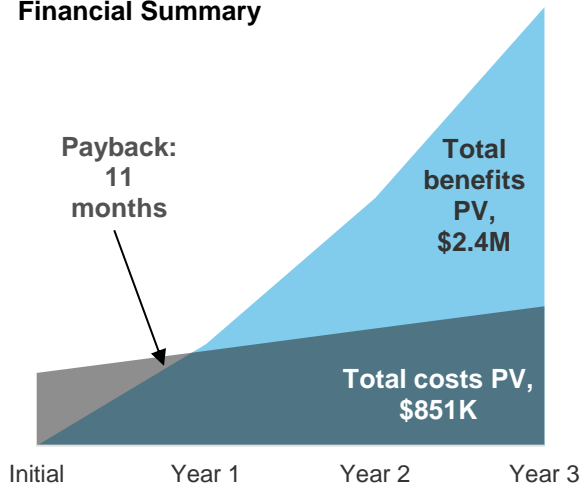
- › **A more stable and available infrastructure.**

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

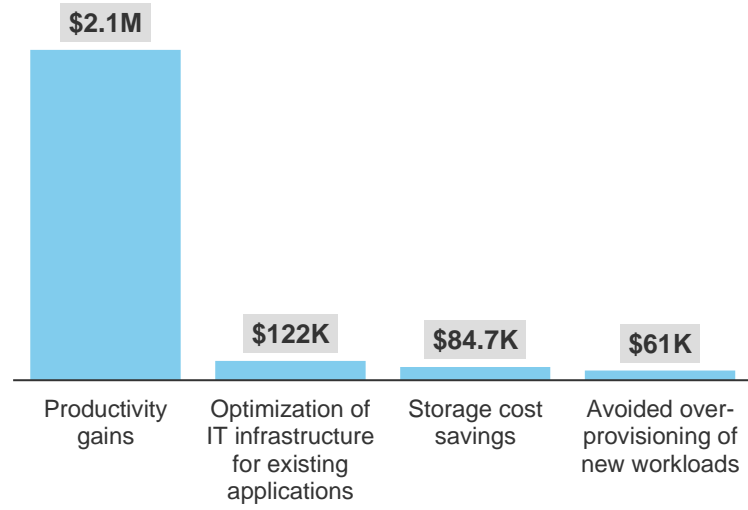
- › **Software licensing and maintenance fees.** The composite organization uses ASG-TMON Performance Analyzer for its 1,500 Windows servers, 500 virtual OS instances, and 250 Unix/Linux servers. The related license and maintenance fees have a three-year risk-adjusted PV of approximately \$652,000.
- › **Internal setup and training costs.** The interviewed organizations reported that setting up ASG-TMON Performance Analyzer in their respective environments took a matter of days. In this analysis, we assume that the composite organization spends 40 man-hours on the initial setup and that four engineers each spends 40 hours on training. The internal labor costs have a three-year risk-adjusted PV of approximately \$7,000.
- › **Infrastructure-related costs.** The infrastructure costs related to ASG-TMON Performance Analyzer in the case of the composite organization take into account the costs of purchasing and running eight servers as well as the fully loaded costs for maintaining 2 TB of storage for keeping the historical data. The infrastructure-related costs have a three-year risk-adjusted PV of approximately \$97,000.
- › **Ongoing administration costs.** In this analysis, we assume the internal day-to-day operations and support of the ASG-TMON Performance Analyzer tool to take 50% of a full-time employee. The resulting ongoing administration costs have a three-year risk-adjusted PV of approximately \$95,000.

Forrester's interviews with four existing customers and subsequent financial analysis found that an organization based on these interviewed organizations experienced benefits of \$2.4 million over three years versus costs of \$851,000, adding up to a net present value (NPV) of \$1.5 million and an ROI of 179%.

Financial Summary



Benefits (Three-Year)



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

TEI Framework And Methodology

From the information provided in the interviews, Forrester has constructed a Total Economic Impact™ (TEI) framework for those organizations considering implementing ASG-TMON Performance Analyzer.

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 ASG-TMON Performance Analyzer can have on an organization:



DUE DILIGENCE

Interviewed ASG-TMON Performance Analyzer stakeholders and Forrester analysts to gather data relative to ASG-TMON Performance Analyzer.



CUSTOMER INTERVIEWS

Interviewed four organizations using ASG-TMON Performance Analyzer to obtain data with respect to costs, benefits, and risks.



COMPOSITE ORGANIZATION

Designed a composite organization based on characteristics of the interviewed organizations.



FINANCIAL MODEL FRAMEWORK

Constructed a financial model representative of the interviews using the TEI methodology and risk-adjusted the financial model based on issues and concerns of the interviewed organizations.



CASE STUDY

Employed four fundamental elements of TEI in modeling ASG-TMON Performance Analyzer's impact: benefits, costs, flexibility, and risks. Given the increasing sophistication that enterprises have regarding ROI analyses related to IT investments, Forrester's TEI methodology serves to provide a complete picture of the total economic impact of purchase decisions. Please see Appendix A for additional information on the TEI methodology.

DISCLOSURES

Readers should be aware of the following:

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

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

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

ASG Technologies provided the customer names for the interviews but did not participate in the interviews.

The ASG-TMON Performance Analyzer Customer Journey

BEFORE AND AFTER THE ASG-TMON PERFORMANCE ANALYZER INVESTMENT

Interviewed Organizations

For this study, Forrester conducted four interviews with ASG-TMON Performance Analyzer customers. Interviewed customers include the following:

INDUSTRY	PROFILE	INTERVIEWEE	IT ENVIRONMENT
Healthcare	US-based Fortune 100 company with global locations	Technical infrastructure specialist	25,000 servers 2 data centers 30% ASG -TMON Performance Analyzer
Industrial manufacturing	Large US-based company with global operations	Performance and capacity engineer	1,500 servers 1 data center 100% ASG -TMON Performance Analyzer
Healthcare information-services provider	US-only company with multiple locations	Service level manager	7,000 servers 50% ASG -TMON Performance Analyzer
Financial services	US-only company with multiple locations	System engineer	2,000+ servers ASG -TMON Performance Analyzer used only on mainframe

Key Challenges

Prior to using ASG-TMON Performance Analyzer, most of the interviewed customers did some performance management but had no real capacity planning practice in place. The lack of visibility drove them to look for a solution that would provide a consistent view across all the different platforms. With ASG-TMON Performance Analyzer, customers were able to realize productivity gains and reduce IT costs.

- › Initially, all four interviewed organizations had similar challenges with their performance management and capacity planning practices. Many did not even do proper capacity planning.
- › To gather data from the different technology platforms, most used very manual processes based on either self-developed applications or a bunch of disparate tools.
- › Interviewees all faced a lack of visibility into future requirements.

Solution Requirements

Only one of the interviewed companies used another commercially available tool. The main business objectives of these companies for deploying ASG-TMON Performance Analyzer were to:

- › Obtain a consistent view across their different technology platforms.
- › Improve the accuracy of predictions in future resource requirements.
- › Provide a more stable processing environment.

“The reporting capability provides us with timely and critical information around our current server environment. I can’t imagine IT operations without it.

Service level manager, healthcare information-services provider



“We used an in-house developed system that did not meet our needs. It also required constant maintenance and very specific knowledge.”

System engineer, financial services company



The interviewed organizations use ASG-TMON Performance Analyzer for different environments. While one company only uses it for its mainframe computers, two organizations use it for their distributed and virtual environments, and one is using the tool on the distributed and virtual side for the mainframe environment. Most of the time there is a core group of engineers, between four and 15 people, who are heavily leveraging the tool and sharing the collected data with a wider audience.

Key Results

All interviewed organizations see great value in using ASG-TMON Performance Analyzer. The interviews revealed that:

- › **The number of people involved in server administration and performance management significantly decreased.** According to the interviewed organizations, the number of servers managed per administrator has increased by a factor ranging between five and 10.
- › **Identifying the root cause and fixing problems now often takes less time.** Having access to historical data and being able to drill down into detailed performance metrics gives the engineers more confidence and a good head start.
- › **Companies use the detailed insights to make infrastructure adjustments.** Adapting the infrastructure to the actual needs can either result in cost savings or prevent future problems.
- › **Detailed insights can also be used to avoid overprovisioning.** This can lead to considerable cost avoidances for the mainframe or other environments.
- › **Resources for new workloads are also allocated more accurately.** Companies make better informed decisions about the introduction of new applications and workloads and might avoid overprovisioning.
- › **Companies can do a better job in forecasting SAN storage requirements.** This may result in the decision to defer investments in additional storage capacity.
- › **ASG-TMON Performance Analyzer is heavily used for virtualization efforts.** It helps organizations to choose suitable physical servers and to allocate the right resources in the virtual environments.
- › **It takes time but pays off.** Interviewees reported that it only takes weeks to benefit from the out-of-the-box functionalities, but that it may take a year to really get proficient and get the most out of the tool and the scripting language.

“[Prior to ASG-TMON Performance Analyzer,] we were using spreadsheets and a suite of platform-specific products to gather the data. It was a very manual and time-consuming process.”

Performance and capacity engineer, industrial manufacturing company



“We could not function without ASG-TMON or a similar product. It provides us with the ability to drill into server performance, understand what is causing issues, and predict future resource constraints.”

Service level manager, healthcare information-services provider



Composite Organization

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

Large financial services firm with 10,000 employees across multiple locations in the United States. The IT department is run centrally and provides most IT services to the organization using internal resources. Among others, the IT department is responsible for maintaining the whole IT infrastructure. The back- and front-end applications are running on distributed and partially virtualized environments within one of the two data centers, and the company is pursuing its virtualization efforts.

Prior to the deployment of ASG-TMON Performance Analyzer, the company had no real capacity planning practice and was doing only little performance management. Gathering the data was a very manual and lengthy process. The engineers were leveraging a number of platform-specific tools and combined the collected data in various spreadsheets.

The lack of visibility drove the company to look for a solution that would provide a consistent view across the different technology platforms, produce consistent reports, and enable trending analysis based on historical data. The company chose to deploy ASG-TMON Performance Analyzer to monitor about 1,500 Windows servers, 500 virtual OS instances, and 250 Unix/Linux servers.

Today, a team of four people relies on ASG-TMON Performance Analyzer for all tasks related to performance management and capacity planning. To assess the performance of the different systems, the company uses sample times at small intervals to detect any variations and sampling rates between 10 and 15 minutes for capacity planning. The organization keeps about three months of daily historical data and about one year of monthly data.

“Our business is constantly growing, and we needed a reliable way of estimating the rate of growth, mainframe upgrades requirements, and timing.”

System engineer, financial services company



Key assumptions

10,000 employees

1,500 Windows servers

500 virtual OS instances

250 Unix/Linux servers

4 users

Financial Analysis

QUANTIFIED BENEFIT AND COST DATA AS APPLIED TO THE COMPOSITE

Total Benefits

REF.	BENEFIT	YEAR 1	YEAR 2	YEAR 3	TOTAL	PRESENT VALUE
Atr	Improved productivity	\$576,000	\$864,000	\$1,152,000	\$2,592,000	\$2,103,201
Btr	Optimization of IT infrastructure for existing applications	\$43,700	\$49,400	\$55,100	\$148,200	\$121,951
Ctr	Storage cost savings	\$34,048	\$34,048	\$34,048	\$102,144	\$84,672
Dtr	Avoidance of overprovisioning of new workloads	\$21,850	\$24,700	\$27,550	\$74,100	\$60,976
	Total benefits (risk-adjusted)	\$675,598	\$972,148	\$1,268,698	\$2,916,444	\$2,370,800

The table above shows the total of all benefits across the areas listed below, as well as present values (PVs) discounted at 10%. Over three years, the composite organization expects risk-adjusted total benefits to be a PV of nearly \$2.4 million.

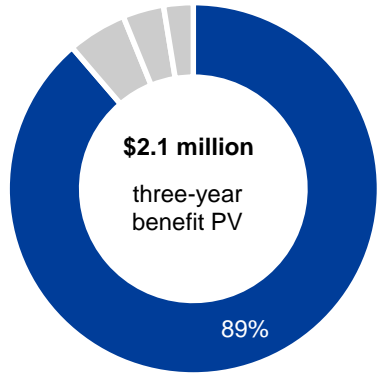
Improved Productivity

Prior to the deployment of ASG-TMON Performance Analyzer, the composite organization had no real capacity planning practice and was doing only little performance management. Gathering the data from the various technology platforms was not only a very manual and lengthy process but also involved a lot of different skillsets. The engineers were leveraging a number of platform-specific tools and assembled the collected data in spreadsheets.

Since the introduction of ASG-TMON Performance Analyzer, both the number of people involved in data collection activities and the process time have been reduced. The ability to script was often cited as a major time saver. Daily, weekly, and monthly reports are now produced in a fraction of the time it used to take. Many of the reports were based on existing scripts provided by ASG, further reducing the time and complexity of generating reports. Moreover, activities such as root-cause analysis and troubleshooting are accelerated and require fewer staff for the investigations.

Interviewees estimated that the ratio of the number of servers to engineers increased by a factor ranging between five and 10. In one interviewee’s words, “The real financial gain is that we have significantly increased the numbers of servers per administrator. I remember — prior to ASG-TMON Performance Analyzer— we were looking at maybe 40 servers per admin, and now it is up to 400 per admin.” A service level manager shared, “Without ASG-TMON Performance Analyzer, it would take us at least five times the number of people for managing this number of servers.”

By using the lower side of this estimation, the composite organization is able to reallocate 16 engineers to other tasks. For the sake of this analysis, we assume a fully loaded annual salary of \$80,000. We further assume that only 50% of this benefit is realized in Year 1, 75% in Year 2, and 100% in Year 3.



“We now get to the real root of the problem more quickly. We have real proof on what is going on.”
Performance and capacity engineer, industrial manufacturing company



Improved Productivity: Calculation Table

REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
A1	Number of staff who can be reallocated		16	16	16
A2	Fully loaded annual salary		\$80,000	\$80,000	\$80,000
A3	Benefit ramp-up		50%	75%	100%
At	Improved productivity	$A1 * A2 * A3$	\$640,000	\$960,000	\$1,280,000
	Risk adjustment	↓10%			
Atr	Improved productivity (risk-adjusted)		\$576,000	\$864,000	\$1,152,000

Optimization Of IT Infrastructure For Existing Applications

Interviewees reported that ASG-TMON Performance Analyzer enables them to assess and predict capacity needs more accurately. This knowledge is often used to adjust the existing infrastructure — sometimes to add more resources to avoid future problems, sometimes to downsize and free up resources that can then be reused for other applications.

One interviewee described: “With ASG-TMON we were able to prove that these virtual machines can easily run at 20 gigabytes, not 28. So we physically trimmed a bunch of servers down from 28 down to 20 gigabytes. And thereby we saved the purchase, administration, and maintenance of four physical hosts.” Another interviewee added: “ASG-TMON allows us to make better predictions. We avoid burning unnecessary million instructions per second (MIPS).”

In the case of the composite organization, we assume that it detects — on average — four opportunities per year to free up resources from existing applications.

“It’s just a huge savings when you can accurately predict your capacity needs and adjust them in real time.”

Service level manager, healthcare information-services provider



Optimization Of IT Infrastructure For Existing Applications: Calculation Table

REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
B1	Number of detected downsizing opportunities		4	4	4
B2	Average capex savings per opportunity		\$10,000	\$10,000	\$10,000
B3	Average annual opex savings per opportunity	$15% * B2$	\$1,500	\$1,500	\$1,500
B4	Capex savings	$B1 * B2$	\$40,000	\$40,000	\$40,000
B5	Opex savings	$(B1 * B3) + B5(Y-1)$	\$6,000	\$12,000	\$18,000
Bt	Optimization of IT infrastructure for existing applications	$B4 + B5$	\$46,000	\$52,000	\$58,000
	Risk adjustment	↓5%			
Btr	Optimization of IT infrastructure for existing applications (risk-adjusted)		\$43,700	\$49,400	\$55,100

Storage Cost Savings

Several of the interviewed organizations indicated that they were able to defer the investment in additional SAN storage due to a more accurate prediction of actually required storage capacity.

One interviewed performance and capacity engineer described: “When a new project comes in, because we have all this historical data, we can look at projects that have similar architectures and do the initial sizing based on true experience rather than vendor recommendation and guesswork. It allows us to do a better job in sizing new incoming workloads.”

ASG-TMON helped another interviewee identify virtualization candidates and ultimately increase their utilization: “We are constantly looking at virtualizing more and more servers. ASG-TMON helps us to determine which servers can be virtualized onto which virtual clusters of which size — not based on previous allocations but on true utilization.”

For the sake of this analysis, we assume that the composite organization saves 10 TB of storage space per year, for a fully loaded price of \$7 per GB per year.

“ASG-TMON helps us with just-in-time capacity planning. So we are not buying too much hardware or storage that is just sitting on the floor. We are able to just keep ahead of the curve.”

*Performance and capacity engineer,
industrial manufacturing company*



“We don’t have a lot of SAN sitting around waiting to be used. Because of the visibility we have with ASG-TMON we kind of have just-in-time SAN.”

*Service level manager, healthcare
information-services provider*



Storage Cost Savings: Calculation Table

REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
C1	Storage deferred for one year annually (GB)		5,120	5,120	5,120
C2	Annual fully loaded storage costs per GB		\$7	\$7	\$7
Ct	Storage cost savings	C1*C2	\$35,840	\$35,840	\$35,840
	Risk adjustment	↓5%			
Ctr	Storage cost savings (risk-adjusted)	\$0	\$34,048	\$34,048	\$34,048

Avoidance Of Overprovisioning For New Workloads

The interviewed organizations admitted that they usually tended to overprovision the infrastructure for new incoming workloads or new applications. However, since the introduction of ASG-TMON Performance Analyzer, they do a better job of right-sizing the environment.

In our example, the composite organization avoids overprovisioning four times per year and saves each time on average \$5,000 in capital expenditure and \$750 in operational costs. The resulting cost savings are indicated in the calculation table below.

“Our performance team uses ASG-TMON mainly to optimize workloads, but it also helps us to avoid overprovisioning.”

*Technical infrastructure specialist,
healthcare organization*



Avoidance Of Overprovisioning For New Workloads: Calculation Table

REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
D1	Number of newly introduced applications		4	4	4
D2	Capex savings per new application		\$5,000	\$5,000	\$5,000
D3	Opex savings per new application	15%*D2	\$750	\$750	\$750
D4	Capex savings	D1*D2	\$20,000	\$20,000	\$20,000
D5	Opex savings	(D1*D3)+ D5(Y-1)	\$3,000	\$6,000	\$9,000
Dt	Avoidance of overprovisioning of new workloads	D4+D5	\$23,000	\$26,000	\$29,000
	Risk adjustment	↓5%			
Dtr	Avoidance of overprovisioning of new workloads (risk-adjusted)		\$21,850	\$24,700	\$27,550

Unquantified Benefits

In addition to the benefits that were quantified in this case study, interviewees also reported that ASG-TMON Performance Analyzer plays a role in providing a more stable and available infrastructure. While not quantifiable in this case, these benefits nevertheless remain important.

Flexibility

There are multiple scenarios in which a customer might choose to implement ASG-TMON Performance Analyzer and later realize additional uses and business opportunities. Flexibility would also be quantified when evaluated as part of a specific project (described in more detail in Appendix A).

While Forrester believes organizations can take advantage of these flexibility options, quantification (using the financial industry standard Black-Scholes or the binomial option pricing models) of the additional value associated with these options for this customer would require scenario development and forward-looking analysis, which is not available at this time.

“Over the years, ASG-TMON has helped us reach a level of sophistication that we could not have otherwise accomplished.”

System engineer, financial services company



Flexibility, as defined by TEI, represents an investment in additional capacity or capability that could be turned into business benefit for a future additional investment. This provides an organization with the "right" or the ability to engage in future initiatives but not the obligation to do so.

Total Costs

REF.	COST	INITIAL	YEAR 1	YEAR 2	YEAR 3	TOTAL	PRESENT VALUE
Etr	Software licenses and maintenance fees	\$435,500	\$87,100	\$87,100	\$87,100	\$696,800	\$652,105
Ftr	Internal setup and training costs	\$7,344	\$0	\$0	\$0	\$7,344	\$7,344
Gtr	Infrastructure-related costs	\$40,800	\$22,440	\$22,440	\$22,440	\$108,120	\$96,605
Htr	Ongoing administration costs	\$0	\$38,250	\$38,250	\$38,250	\$114,750	\$95,122
	Total costs (risk-adjusted)	\$483,644	\$147,790	\$147,790	\$147,790	\$927,014	\$851,176

Software Licenses And Maintenance Fees

The composite organization uses ASG-TMON Performance Analyzer for 1,500 Windows servers, 500 virtual OS instances, and 250 Unix/Linux servers. For this scope, ASG Technologies determined the typical upfront license fee using an average discount for a total of \$435,500. The annual software maintenance costs are fixed at 20% of the license fees.

The table above shows the total of all costs across the areas listed below, as well as present values (PVs) discounted at 10%. Over three years, the composite organization expects risk-adjusted total costs to be a PV of \$851,176.

Software Licenses And Maintenance Fees: Calculation Table

REF.	METRIC	CALC.	INITIAL	YEAR 1	YEAR 2	YEAR 3
E1	Software license fees		\$435,500			
E2	Software maintenance costs	E1*20%		\$87,100	\$87,100	\$87,100
Et	Software licenses and maintenance fees	E1+E2	\$435,500	\$87,100	\$87,100	\$87,100
	Risk adjustment	0%				
Etr	Software licenses and maintenance fees (risk-adjusted)		\$435,500	\$87,100	\$87,100	\$87,100

Internal Setup And Training Costs

The composite organization spends 40 man-hours setting up ASG-TMON Performance Analyzer and configuring all the different servers and instances. In addition, the four engineers of the performance management and capacity planning team each spends another 40 hours to train themselves on the new tool. With an assumed fully loaded hourly salary of \$36, the company spends \$7,200 for the initial setup and training costs.



40 hours
Implementation

40 hours
Training per engineer

Internal Setup And Training Costs: Calculation Table

REF.	METRIC	CALC.	INITIAL	YEAR 1	YEAR 2	YEAR 3
F1	Setup labor (hours)		40			
F2	Training labor (hours)	40 hours of training for four people	160			
F3	Fully- loaded hourly salary	\$75,000/2080 annual work hours	\$36			
Ft	Internal setup and training costs	$(F1+F2)*F3$	\$7,200	\$0	\$0	\$0
	Risk adjustment	↑2%				
Ftr	Internal setup and training costs (risk-adjusted)		\$7,344	\$0	\$0	\$0

Infrastructure-Related Costs

For running the ASG-TMON Performance Analyzer solution, the composite organization had to invest in eight servers — four used as management servers and four as collectors — for a total of \$40,000. For the hosting, management, maintenance, and support of these servers, the company spends another \$6,000 per year.

In addition, to store all the historical data with daily and monthly summaries, we assume that the organization needs approximately 2 TB of storage capacity. Further assuming fully loaded storage costs of \$8 per GB per year, the company incurs additional storage costs of \$16,000 per year.



Additional infrastructure:
8 servers
2 TB Storage

Infrastructure-Related Costs: Calculation Table

REF.	METRIC	CALC.	INITIAL	YEAR 1	YEAR 2	YEAR 3
G1	Number of servers		8			
G2	Average price of a server		\$5,000			
G3	Associated operational and maintenance costs	15% of purchase price		\$6,000	\$6,000	\$6,000
G4	Storage required (GB)			2,048	2,048	2,048
G5	Annual fully loaded storage costs per GB			\$8	\$8	\$8
G6	Storage costs	$G4*G5$ (rounded)		\$16,000	\$16,000	\$16,000
Gt	Infrastructure-related costs	$(G1*G2)+G3+G6$	\$40,000	\$22,000	\$22,000	\$22,000
	Risk adjustment	↑2%				
Gtr	Infrastructure related costs (risk-adjusted)		\$40,800	\$22,440	\$22,440	\$22,440

Ongoing Administration Costs

For the ongoing administration of the tool and maintaining the list of servers, this analysis takes into account 50% of a full-time equivalent (FTE) resource with an average fully loaded annual salary of \$75,000.

Ongoing Administration Costs: Calculation Table

REF.	METRIC	CALC.	INITIAL	YEAR 1	YEAR 2	YEAR 3
H1	Percentage of FTE			50%	50%	50%
H2	Average fully loaded annual salary			\$75,000	\$75,000	\$75,000
Ht	Ongoing administration costs	H1*H2	\$0	\$37,500	\$37,500	\$37,500
	Risk adjustment	↑2%				
Htr	Ongoing administration costs (risk-adjusted)		\$0	\$38,250	\$38,250	\$38,250

Risk

Forrester defines two types of risk associated with this analysis: implementation risk and impact risk. “Implementation risk” is the risk that a proposed investment in ASG-TMON Performance Analyzer may deviate from the original or expected requirements, resulting in higher costs than anticipated. “Impact risk” refers to the risk that the business or technology needs of the organization may not be met by the investment in ASG-TMON Performance Analyzer, resulting in lower overall total benefits. The greater the uncertainty, the wider the potential range of outcomes for cost and benefit estimates.

Quantitatively capturing implementation and impact risk by directly adjusting the financial estimates results in more meaningful and accurate estimates and a more accurate projection of the ROI. In general, risks affect costs by raising the original estimates, and they affect benefits by reducing the original estimates. The risk-adjusted numbers should be taken as “realistic” expectations since they represent the expected values considering risk.

The following implementation risks that affect costs are identified as part of this analysis:

- › The interviewed organizations reported that ASG-TMON Performance Analyzer is easy to set up and that the users require little training. This cost category is therefore seen as low risk and the related costs have been risk-adjusted to be 2% greater.
- › The IT infrastructure required to run ASG-TMON Performance Analyzer has a rather small footprint. The uncertainty of the assumed costs is relatively low and the costs have therefore only been increased by 2%.
- › Several of the interviewed organizations estimated that the ongoing administration of the tool takes the equivalent of a half-time resource. This cost category is therefore seen as low risk and has been risk-adjusted by 2%.

The following impact risks affect benefits in this analysis:

Implementation risk is the risk that a proposed investment may deviate from the original or expected requirements, resulting in higher costs than anticipated. The greater the uncertainty, the wider the potential range of outcomes for cost estimates.

Impact risk is the risk that the business or technology needs of the organization may not be met by the investment, resulting in lower overall total benefits. The greater the uncertainty, the wider the potential range of outcomes for benefit estimates.

- › The financial impact of productivity gains is based on high-level estimations done by the interviewed organizations. In addition, the pace at which the company realizes these productivity gains depends on how effectively and productively the organization can reallocate the freed-up time and resources. This benefit category is therefore deemed high risk, and the value has been risk-adjusted by 10%.
- › The other three benefit categories around optimization of the existing IT infrastructure, storage cost savings, and avoided overprovisioning for new workloads are based on high-level estimations. Different organizations may find that they have more or fewer opportunities to realize these cost savings. These categories are therefore considered as medium risk, and the values have been decreased by 5%.

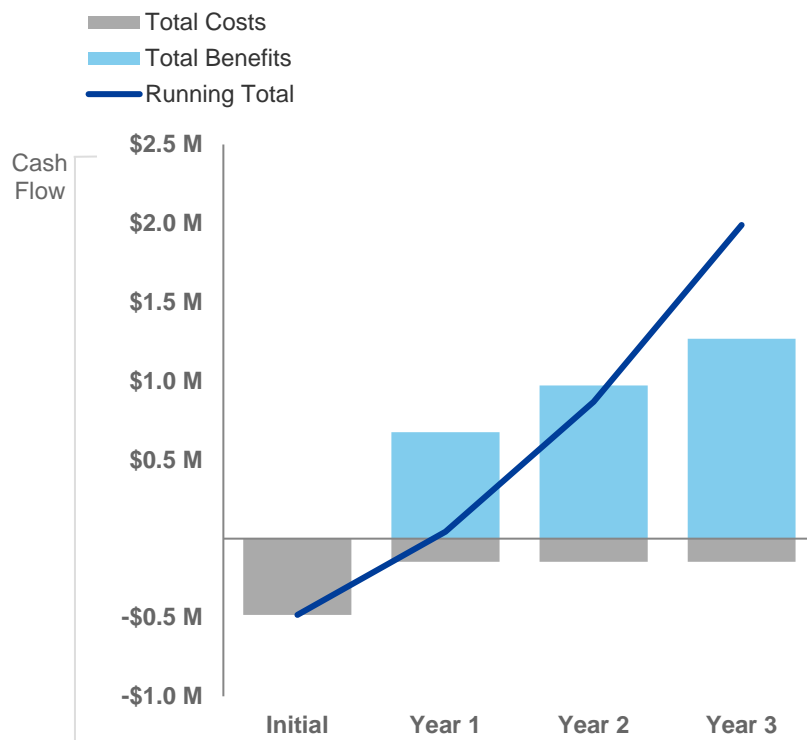
Readers are urged to apply their own risk ranges based on their own degree of confidence in the cost and benefit estimates.

Risks	
COSTS	RISK ADJUSTMENT
Software license and maintenance fees	→ 0%
Internal setup and training costs	↗ 2%
Infrastructure-related costs	↗ 2%
Ongoing administration costs	↗ 2%
BENEFITS	RISK ADJUSTMENT
Improved productivity	↓ 10%
Optimization of IT infrastructure for existing applications	↘ 5%
Storage cost savings	↘ 5%
Avoidance of overprovisioning of new workloads	↘ 5%

Financial Summary

CONSOLIDATED THREE-YEAR RISK-ADJUSTED METRICS

Cash Flow Chart (Risk-Adjusted)



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



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

Cash Flow Table (Risk-Adjusted)

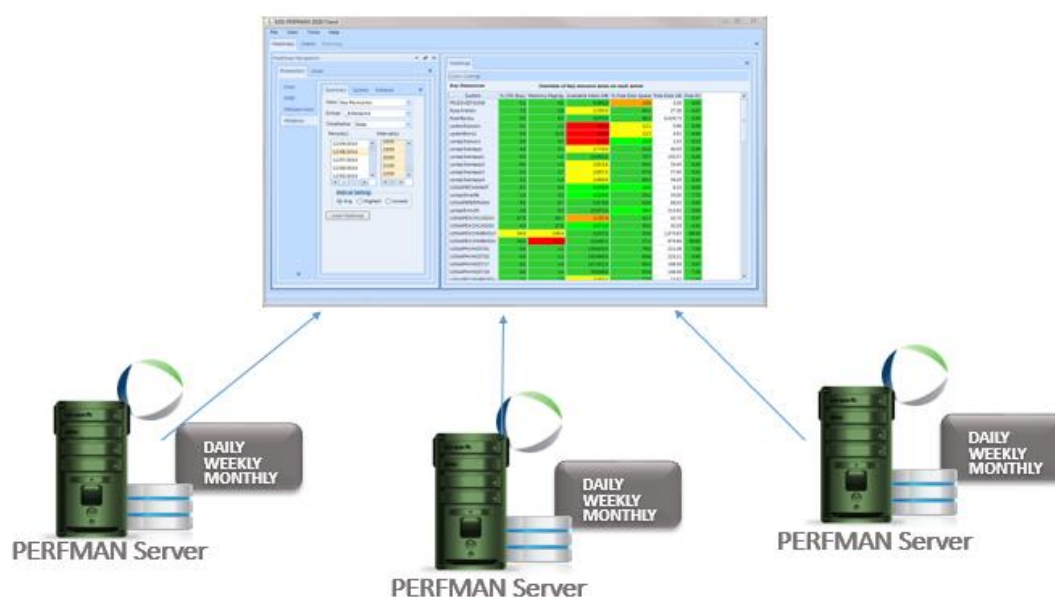
	INITIAL	YEAR 1	YEAR 2	YEAR 3	TOTAL	PRESENT VALUE
Total costs	(\$483,644)	(\$147,790)	(\$147,790)	(\$147,790)	(\$927,014)	(\$851,176)
Total benefits	\$0	\$675,598	\$972,148	\$1,268,698	\$2,916,444	\$2,370,800
Net benefits	(\$483,644)	\$527,808	\$824,358	\$1,120,908	\$1,989,430	\$1,519,624
ROI						179%
Payback period						11 months

ASG-TMON Performance Analyzer: Overview

The following information is provided by ASG Technologies. Forrester has not validated any claims and does not endorse ASG-TMON Performance Analyzer or its offerings.

According to ASG Technologies, ASG-TMON Performance Analyzer helps IT organizations achieve IT utilization competency through automated analysis, reporting, modeling and capacity planning. It allows IT professionals and executives to get immediate access to crucial information about IT resource utilization future capacity demand and service level impacts, using intelligent enterprise-wide business views. It provides superior analysis, trending, forecasting and modeling that allow a company to set realistic expectations, prevent unnecessary hardware purchases, maximize expensive resources, and communicate accurate and actionable information. These solutions span the wide array of IT environments, providing a single point of control to manage Windows, Unix, Linux, and z/Architecture environments — including the ability to manage, control, and effectively leverage expensive mainframe MIPS capacity.

- › **ASG-TMON Performance Analyzer:** a next generation IT capacity planning, performance management and team collaboration solution.
- › **ASG-TMON Performance Analyzer for Linux:** for visibility and insight to avoid problems, reduce costs and do more with less.
- › **ASG-TMON Performance Analyzer for Unix:** for bringing clarity to the complexity of Unix systems.
- › **ASG-TMON Performance Analyzer for VMware:** for discovery, analysis, planning, consolidation, implementation, monitoring, and management of VMware environments.
- › **ASG-TMON Performance Analyzer for Windows:** for optimizing the performance of your Windows IT infrastructure.
- › **ASG-TMON Performance Analyzer for App Servers:** an application server performance management solution for any J2EE compliant application servers.
- › **ASG-TMON Performance Analyzer for z/OS:** for a complete view into the performance of your mainframes, their peripherals and the level of resources being used.



ASG-PERFMAN 2020 server federation provides scalability and collaboration among users of disparate technologies

Source: ASG

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.