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The Total Economic Impact™ Of Cisco Network Optimization Service MultiCompany Value Analysis

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TABLE OF CONTENTS

Executive Summary	3
Purpose	3
Methodology.....	4
Approach	4
Key Findings	5
Disclosures.....	5
Cisco Network Optimization Service: Overview	6
Analysis	7
Interview Highlights.....	7
TEI Framework	9
Costs	10
Benefits	11
Additional Benefits Not Quantified.....	15
Risk.....	15
Flexibility.....	17
TEI Framework: Summary.....	17
Study Conclusions.....	19
Appendix A: Composite Organization.....	20
Appendix B: Total Economic Impact™ Overview	21
Benefits	21
Costs	21
Risk.....	21
Flexibility.....	21
Appendix C: Glossary.....	22
Appendix D: About The Project Manager.....	23
Appendix E: About Cisco Network Optimization Service.....	24

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Executive Summary

In July 2008, Cisco Systems commissioned Forrester Consulting to examine the total economic impact and potential return on investment (ROI) that enterprises may realize by purchasing Cisco Network Optimization Service.

Cisco Network Optimization Service is offered by Cisco to help businesses optimize their network infrastructure to best support their business objectives. Using Cisco expertise and best practices, Cisco Network Optimization Service helps enterprises prepare their core routing and switching network to support new business processes, applications, and technologies. Through assessments, strategic reviews, and ongoing network support, this service focuses on improving network performance to prepare for future changes.

Offered by Cisco and available globally, this service can be purchased from Cisco or a Cisco Certified Partner on a yearly or multi-year contract basis.

While Cisco Network Optimization Service focuses on the core infrastructure, Cisco also offers Cisco Advanced Technology Optimization Services that aim to help improve the performance of specific technologies (e.g., Cisco Unified Communications) on the network. The Cisco Advanced Technology Optimization Services were not part of this study.

This study illustrates the financial impact of using Cisco Network Optimization Service in a midsize, multilocation enterprise organization.

In conducting in-depth interviews with five existing customers, Forrester found that these companies achieved:

- A reduction in network downtime, resulting in productivity gains for the organization.
- Savings due to network reliability for critical applications.
- Improved scalability, leading to the ability of an organization to meet growing functional requirements with minimum additions in hardware and changes in software.
- Faster time-to-market.
- Improved security.
- Reduced labor costs associated with network support.
- Lower labor costs and training costs associated with designing, planning, and implementing network projects.

Purpose

The purpose of this study is to provide readers with a framework to evaluate the potential financial impact of Cisco Network Optimization Service on their organizations. Forrester's aim is to clearly show all calculations and assumptions used in the analysis. Readers should use this study to better

understand and communicate a business case for investing in the Cisco Network Optimization Service.

Methodology

Cisco selected Forrester for this project because of its industry expertise in network infrastructure and Forrester's Total Economic Impact™ (TEI) methodology. TEI not only measures costs and cost reduction (areas that are typically accounted for within IT) but also weighs the enabling value of a technology in increasing the effectiveness of overall business processes.

For this study, Forrester employed four fundamental elements of TEI in modeling the Cisco Network Optimization Service:

1. Costs and cost reduction.
2. Benefits to the entire organization.
3. Flexibility.
4. Risk.

Given the increasing sophistication that enterprises have regarding cost analyses related to IT investments, Forrester's TEI methodology serves an extremely useful purpose by providing a complete picture of the total economic impact of purchase decisions. Please see Appendix B for additional information on the TEI methodology.

Approach

Forrester used a five-step approach for this study:

1. Forrester gathered data from existing Forrester research relative to Cisco Network Optimization Service and the network infrastructure market in general.
2. Forrester interviewed Cisco marketing and sales personnel to fully understand the potential (or intended) value proposition of Cisco Network Optimization Service.
3. Forrester conducted a series of in-depth interviews with five organizations currently using Cisco Network Optimization Service solutions.
4. Forrester constructed a financial model representative of the interviews. This model is described in the TEI Framework section below.
5. Forrester created a composite organization based on the interviews and populated the framework using data from the interviews as applied to the composite organization. This study illustrates the financial impact of Cisco Network Optimization Service by aggregating the findings from the customer interviews and portraying a composite organization to illustrate the quantifiable costs and benefits of deploying Cisco Network Optimization Service.

For further discussion of the composite organization, please see Appendix A.

Key Findings

Forrester's study yielded several key findings:

- **Payback Period and ROI.** As seen in Table 1, the breakeven point (payback period) is less than six months after deployment, with the ROI for the composite company at 121%.
- **Benefits.** The benefits that the composite company received, which reflect the experiences of the organizations interviewed for this study, aggregate to a present value of approximately \$3,411,865 (net present value) over a three-year contract. Please see pages 12 to 15 for a complete description of these financial benefits.
- **Costs.** The cost to implement Cisco Network Optimization Service consists of the services contract fee, which is \$1,546,657 (net present value) over a three-year period.

Table 1 illustrates the risk-adjusted cash flow for the composite organization, based on data and characteristics obtained during the interview process. Forrester risk-adjusts these values to take into account the potential uncertainty that exists in estimating the costs and benefits of a technology investment. The risk-adjusted value is meant to provide a conservative estimate, incorporating any potential risk factors that may later impact the original cost and benefit estimates. For a more in-depth explanation of risk and risk adjustments used in this study, please see the "Risk" section.

Table 1: Composite Company ROI, Risk-Adjusted

Ref.	Project cash flow	Formula	Initial Cost	Year 1	Year 2	Year 3	Total	NPV
J1	Total costs		(\$600,000)	\$0	(\$600,000)	(\$600,000)	(\$1,800,000)	(\$1,546,657)
K1	Total benefits		\$0	\$1,371,962	\$1,371,962	\$1,371,962	4,115,885	3,411,865
P1	Total		(\$600,000)	\$1,371,962	\$771,962	\$771,962	\$2,315,885	\$1,865,209
P2	Return on investment	(K1-J1)/J1	121%					
P3	Payback period		Less than 6 months					

Source: Forrester Research, Inc.

Note that calculation totals throughout the study may not align because of rounding.

Forrester found that higher ROIs were associated with companies that had a high cost of downtime and critical applications running on the Cisco network.

Disclosures

The reader should be aware of the following:

- The study was commissioned by Cisco and delivered by the Forrester Consulting group.

- Cisco reviewed and provided feedback to Forrester, but Forrester maintained editorial control over the study and its findings. Forrester did not accept changes to the study that contradicted Forrester's findings or obscured the meaning of the study.
- The customer names for the interviews were provided by Cisco.
- Forrester makes no assumptions as to the potential ROI that other organizations will receive with Cisco Network Optimization Service. Forrester strongly advises that readers use their own estimates within the framework provided in the report to determine the appropriateness of an investment in Cisco Network Optimization Service.
- This study is not meant to be used as a competitive product analysis.

Cisco Network Optimization Service: Overview

Cisco positions Cisco Network Optimization Service as an offering to help customers optimize their core routing and switching network to meet future needs and help them succeed with new technologies, business processes, and applications.

Cisco Network Optimization Service combines Network Assessment, Network Support, and Network Learning in a tightly integrated, comprehensive subscription package:

- **Network Assessment:** Can help improve network performance and prepare the infrastructure for future changes through assessments and strategy review sessions.
- **Network Support:** Can help make the network more resilient, stable, and predictable through on-site support and consultation, analysis of performance data, review sessions, planning sessions, recommendations, and reports
- **Network Learning:** Can help increase customer networking teams' self-sufficiency by sharing knowledge and leading practices through knowledge transfer sessions, access to a technical knowledge library, and customized training sessions.

Cisco also offers Advanced Technology Optimization Services that can also be purchased to help improve the performance of specific technologies on the network, including: application and visibility management, Cisco TelePresence™, Cisco Unified Communications, Cisco Unified Contact Center, data center, security, wireless LAN, and outdoor wireless. These services were not part of this study.

Analysis

As stated in the Executive Summary, Forrester took a multi-step approach to evaluating the impact that implementing Cisco Network Optimization Service can have on an organization. This included:

- Interviews with Cisco marketing, engineering, and product management personnel.
- In-depth interviews with five organizations in the US, Canada, and Europe currently using Cisco Network Optimization Service.
- Construction of a common financial framework for the implementation of Cisco Network Optimization Service.
- Construction of a composite organization based on the characteristics of the interviewed organizations.

Interview Highlights

A total of five interviews were conducted for this study, involving representatives from Cisco customers based in the US, Canada, and Europe. The following is a brief description of each of the interviewed organizations, all of whom were promised anonymity:

1. A \$70 million state government agency based in the US with more than 200,000 employees. This state government agency has a centralized IT organization that supports 26 agencies and approximately 2,500 network locations.
2. A financial services firm based in the US with more than 1,000 employees and five locations in the US and remote offices in Europe and Asia. This firm has approximately 5,000 connections on a daily basis with more than 80 different countries. The network is primarily managed centrally.
3. A multinational leader in the gas sector in Spain and Latin America, one of the world's largest gas transporters and operators of combined cycle generating plants. It is also a large private electricity generating operator.
4. A leading air transport management firm that operates and maintains a major international airport in Canada.
5. A European in-house technology services organization that provides technical solutions to the EMEA business units of a leading global financial services company. This technology services organization has more than 8,000 employees.

The in-depth interviews uncovered several key insights:

- Organizations generally see an increased uptime of the network with the use of Cisco Network Optimization Service. This is due to: 1) a reduction in network outages, and 2) shorter problem-resolution time frames.
- Customers interviewed also report using Cisco Network Optimization Service when considering a refresh of networking technology and planning long-term network strategy. These include such initiatives as highlighting revenue generation opportunity over cost of technology, ensuring release management compliance, and reconciling software and platforms across the enterprise.
- Large organizations use Cisco Network Optimization Service for engineering staff augmentation.
- Smaller organizations are apt to rely more on Cisco Network Optimization Service as an “outsourced” resource. Some of these organizations rely heavily on Cisco for design support, so these organizations’ personnel can “focus on deployment.” Other small organizations note that with increased reliance on Cisco Network Optimization Service, the engineering and architecture team can spend less time on research and focus more on strategic projects such as designing client solutions
- Organizations also integrate the Continuous Learning feature of Cisco Network Optimization Service into formal training processes for network operations staff. Customers also noted that the Cisco Network Optimization Service also provides an opportunity for cross-training on new technology.
- Quarterly reviews with Cisco Network Optimization Service are typically used for the status of the current production network, end-of-life analysis, and the status of any project-related design during the 90-day period.

TEI Framework

Introduction

From the information provided in the in-depth interviews, Forrester has constructed a TEI framework for those organizations considering the implementation of Cisco Network Optimization Service. The objective of the framework is to identify the cost, benefit, flexibility, and risk factors that impact the investment decision. The associated ROI analysis illustrates the areas impacted financially by the introduction or use of Cisco Network Optimization Service.

Composite Organization

Based on interviews with five existing customers — provided by Cisco — Forrester constructed a composite organization, referred to in this document as “Paragon.” The composite organization represents a US-based services firm that provides a variety of trading, financial advisory and consulting functions through its different business units. It has \$1 billion in revenue, headquarters in North America, and branch offices in Europe, the Middle East, and Asia with 2,500 employees.. Paragon also has the following characteristics:

Current network environment

- Five locations, two data centers, and multiple remote offices.
- The infrastructure encompasses all security, firewall, VPN, SSL termination, load balancing, and data connectivity. Central infrastructure supports all enterprise and most division-specific applications.
- 130 IT staff located in a central location, with 30 of those staff allocated to network operations.

Reasons for investment in Cisco Network Optimization Service

- As several critical applications are running on the network, the business requires the network to be reliable, stable, and predictable. Otherwise, extended network downtime has significant financial implications.
- The organization is experiencing rapid growth through acquisitions and mergers and has increased technology requirements to match this expansion.
- The IT organization requires access to network engineering resources and expertise that are too costly to maintain internally.

Framework Assumptions

Table 2 lists the discount rate used in the PV and NPV calculations and time horizon used for the financial modeling.

Table 2: General Assumptions

Ref.	General assumptions	Value
	Discount rate	10%
	Length of analysis	Three years

Source: Forrester Research, Inc.

Organizations typically use discount rates between 8% and 16% based on current environment. Readers are urged to consult with internal financial experts to determine the most appropriate discount rate to use within their own organizations.

In addition to the financial assumptions used to construct the cash-flow analysis, Table 3 provides the fully loaded salary assumptions used within this analysis.

Table 3: Salary Assumptions

Ref.	Metric	Calculation	Value
A1	Hours per week		40
A2	Weeks per year		52
A3	Hours per year (M-F, 9-5)		2,080
A4	Hours per year (24x7)		8,736
A5	Network Engineer		\$100,000
A6	Hourly	(A5/A3)	\$48

Source: Forrester Research, Inc.

Costs

As the product under evaluation is a services contract, the only cost component included in the analysis is the Cisco Network Optimization Service contract fee.

Cisco Network Optimization Service Contract Fee

The cost of Cisco Network Optimization Service for the composite organization is \$600,000 annually over a three-year contract. This translates to a fee of \$1,800,000 for three years.

Table 4: Cisco Network Optimization Service Fees

Ref.	Metric	Calculation	Per Period	Year 1	Year 2	Year 3	Total
A1	Cisco Network Optimization Service Fees		600,000				
Ato	Total (Original)		\$0	(\$600,000)	(\$600,000)	(\$600,000)	(\$1,800,000)

Source: Forrester Research, Inc.

Benefits

Over the past five years, as the Paragon network has continued to grow and critical business applications are placed on the network, Paragon has decided to purchase the Cisco Network Optimization Service to: 1) help devise the ongoing network management plan to improve network performance and increase uptime, 2) plan and design the systems to ensure that the organization can strategically approach scalability and growth, and 3) obtain access to Cisco Network Optimization Service resources to assist in handling network outages by providing network information to lower the issue discovery time.

As the organization's relationship with Cisco has progressed, Paragon now uses Cisco Network Optimization Service to: 1) continue to increase network performance and reliability, 2) devise future plans, and 3) augment existing network engineering staff. Cisco Network Optimization Service provides Paragon with access to a level of knowledge about Cisco products that enables the company to "achieve optimal performance."

Resource Cost Avoidance For Network Optimization

By using Cisco Network Optimization Service rather than hiring staff for network optimization and enhancement processes, Paragon estimates that it has saved hiring approximately 30% more network engineers. At a current level of 30 staff allocated to network operations, this is equivalent to an avoided cost of nine full-time employees (FTEs). Companies interviewed highlighted the "level of service, strong relationship with Cisco, and people who understand our business" that the Cisco Network Optimization Service provides.

Technical assistance that Cisco extends may include updates on features, functions, product road maps, and how to use current technology to improve performance and optimize the network. By providing access to the depth of technical knowledge of Cisco engineers, Paragon has the added assurance that the network being designed is the best infrastructure for the organization's needs.

With compensation estimated at \$100,000 annually, fully loaded per FTE, Paragon will save \$900,000 per year, for a total of \$2,700,000 over three years in resource cost avoidance.

Table 5: Resource Cost Avoidance From Network Optimization

Ref.	Metric	Calculation	Per Period	Year 2	Year 3	Total
A1	Number of FTEs		9			
A2	Yearly Compensation Per Worker		100,000			
At	Resource Cost Avoidance From Network Optimization	A1*A2	900,000			
Ato	Total (Original)		\$900,000	\$900,000	\$900,000	\$2,700,000

Source: Forrester Research, Inc.

Resource Cost Avoidance By Leveraging Cisco Expertise For Troubleshooting

Another benefit expressed by interviewed companies is the access to Cisco engineers for support to shorten the resolution time for system problems, including outages. Through Cisco Network Optimization Service, the company has access to, as the Director of Network Services of one Cisco customer stated, “the best and brightest at Cisco. The level of support that we receive is at a much higher level and problems are resolved at a much quicker rate.”

One customer related an incident regarding LAN switches that brought its entire network down. Cisco Network Optimization Service provided on-site support and helped analyze the root cause and stability of the environment. The incident was resolved with three days in total of outages. This customer estimated that without Cisco’s assistance in resolving the incident, the outages would have lasted for six days instead.

By avoiding the cost of hiring and maintaining equivalently qualified personnel to handle network problem resolution, the composite organization estimates that Cisco Network Optimization Service has saved them two FTEs annually. This translates to total resource cost avoidance of \$600,000 over three years due to improved troubleshooting.

Table 6: Resource Cost Avoidance For Troubleshooting

Ref.	Metric	Calculation	Per Period	Year 2	Year 3	Total
A1	Number of FTEs		2			
A2	Annual Fully Loaded Compensation		100,000			
At	Resource Cost Avoidance From Troubleshooting	A1*A2	200,000			
Ato	Total (Original)		\$200,000	\$200,000	\$200,000	\$600,000

Source: Forrester Research, Inc.

Productivity Gains Due To Increased Uptime

All companies interviewed for this study described cost savings due to increased network reliability and performance from the use of Cisco Network Optimization Service. This was due to the fact that the level of support that they receive is at a “much higher level.” Aspects of this service include network assessments, audits, data collection, data analysis, trending reports, improvement plans, proactive design sessions, security alerts, software management strategy, and the network management road map. This gives the organizations an improved approach to ongoing network management, helping them resolve problems at a quicker rate, and contributes to a higher level of uptime due to the optimization of the network.

The cost savings due to improved network reliability and increased uptime for Paragon is conservatively estimated as a function of the productivity gains of the composite organization's employees, due to a lower level of disruption in service for their applications that are on the network. With the assumption that all 2,500 employees of the organization are affected by a network outage, Paragon estimates that Cisco Network Optimization Service has saved their network 8 hours in downtime annually. Forrester conservatively estimates that 60% of that time could have been used by Paragon employees for productive work.

Productivity gains are conservatively calculated in this study as a function of average employee compensation rather than being based upon the revenue per employee, which is typically much greater. The average fully loaded compensation per FTE at Paragon is estimated at \$50,000 per year or \$24.04 per hour. At a 60% productivity capture rate, the productivity gains due to cost avoidance of downtime for a three-year analysis for the composite organization are approximately \$865,385 in aggregate.

Table 7: Productivity Savings From Increased Uptime

Ref.	Metric	Calculation	Per Period	Year 2	Year 3	Total
A1	Hours Saved Per Year		8			
A2	Potential Exposure		2,500			
A3	Hourly Rate Per Worker		24.04			
A4	Percent Captured		60%			
At	Productivity Savings From Increased Uptime	$A1 \times A2 \times A3 \times A4$	288,462			
Ato	Total (Original)		\$288,462	\$288,462	\$288,462	\$865,385

Source: Forrester Research, Inc.

Avoided Cost Of Loss From Critical Application Failure

A number of the customers interviewed had very critical applications dependent on their network infrastructure — such as airline arrivals and departure schedules and data, financial trading functions, and power generation. Network incidents that took any of these critical applications down would result in a direct financial impact for these organizations and their partners. These financial losses could take various forms, such as dollar loss due to business interruption (such as in trading) or charges for not meeting service-level agreements with partners.

Using Cisco Network Optimization Service enabled these organizations to design their networks to increase reliability, build in redundancy, and minimize component-level failures. The ability to call in Cisco engineers to get a high level of support when needed also helps in minimizing the effect of network incidents on critical applications.

The generally accepted method of valuing the risk of critical losses from external and internal incidents is to look at an amount of a potential loss, assume a frequency of loss, and estimate a probability for incurring the loss. Forrester conservatively estimates that Paragon could face a \$2,000,000 loss annually, which includes the cost of revenues lost from business interruption in financial trading. Forrester further assumes that the probability of a loss of that amount is 3% and this results in an annual avoided cost of \$60,000, as shown in Table 8.

Users of this study are encouraged to use this method with their own assumptions for potential penalty amounts, frequency, and probability according to their particular business environment.

Table 8: Avoided Cost Of Loss From Critical Application Failure

Ref.	Metric	Calculation	Per Period	Year 2	Year 3	Total
A1	Potential Exposure		2,000,000			
A2	Probability of Incident		3%			
At	Avoided Cost Of Loss From Critical Application Failure	A1*A2	60,000			
Ato	Total (Original)		\$60,000	\$60,000	\$60,000	\$180,000

Source: Forrester Research, Inc.

Total Benefits

The sum of the quantified benefits that the composite company will receive over a three-analysis is \$4,345,385.

Table 9: Total Benefits Of Cisco Network Optimization Service

Benefits	Initial	Year 1	Year 2	Year 3	Total
Resource Cost Avoidance From Network Optimization		900,000	900,000	900,000	2,700,000
Resource Cost Avoidance From Troubleshooting		200,000	200,000	200,000	600,000
Productivity Savings From Increased Uptime		288,462	288,462	288,462	865,385
Avoided Cost Of Loss From Critical Application Failure		60,000	60,000	60,000	180,000
Total		\$1,448,462	\$1,448,462	\$1,448,462	\$4,345,385

Source: Forrester Research, Inc.

Additional Benefits Not Quantified

The Cisco customers interviewed also identified the following unquantified benefits of using Cisco Network Optimization Service:

Improved Scalability Of Network

By using Cisco Network Optimization Service to design and implement a more efficient network, interviewed customers were able to improve the scalability of their architecture. The network engineers could add more users to the network than they would have otherwise, through such initiatives as server and application virtualization. Customers noted that their network architecture can now also scale to meet their organization's functionality requirements with minimum additions of hardware and changes of software. This enhanced performance of the existing network infrastructure enables the organization to "do more with less."

Faster Time-To-Market

Interviewed customers noted that working with Cisco Network Optimization Service cut down on the rework needed for their network projects. Some of these projects included bringing on a third-party merchant connection through VPN capability and deploying a new feature with a content-switching module. These customers cited incidents where Cisco Network Optimization Service has saved them time, ranging from a minimum of a week of project time up to a maximum of one month of savings on a four-month project.

Increased Security

Interviewed organizations have noted that using Cisco Network Optimization Service has improved their security by providing network monitoring services — Cisco automatically sends security alerts and provides assessments of when its customers' networks are at risk.

Risk

Risk is the third component within the TEI model; it is used as a filter to capture the uncertainty surrounding different cost and benefit estimates. If a risk-adjusted ROI still demonstrates a compelling business case, it raises confidence that the investment is likely to succeed because the risks that threaten the project have been taken into consideration and quantified. The risk-adjusted values should be taken as "realistic" expectations. In general, risks affect costs by raising them, while eroding potential benefits.

For the purpose of this analysis, Forrester risk-adjusts cost and benefit estimates to better reflect the level of uncertainty that exists for each estimate. The TEI model uses a triangular distribution method to calculate risk-adjusted values. To construct the distribution, it is necessary to first estimate the low, most likely, and high risk values that could occur within the current environment. The risk-adjusted value is the mean of the distribution of those points.

For example, take the case of productivity savings due to reduction of downtime. The \$865,385 value used in this analysis can be considered the "most likely" or expected value. Productivity savings vary based on the fully loaded cost of resources averaged across the organization and, to an extent, the criticality of the applications on the network for a particular organization. This variability represents a risk that must be captured as part of this study. Forrester uses a risk factor of 60% on the low end, 100% as the most likely, and 100% on the high end. This has the effect of increasing the cost estimate to take into account the fact that original benefit estimates are more likely to be revised downward than upward. Forrester then creates a triangular distribution to reflect the range of expected benefits, with 87% as the mean (87% is equal to the mean of 60%, 100%,

and 100%). Forrester applies this mean to the most likely estimate, \$865,385, to arrive at a risk-adjusted value of \$752,885.

The following management and process risks were considered in this study:

- The variability in the savings from resource cost avoidance based on the effectiveness of network optimization and problem resolution timeliness.
- The uncertainty in total productivity savings that can be captured from a general reduction in downtime.
- Forrester's risk-adjustment for uncertainty in the probability and magnitude of losses from critical application failure.
- The cost of Cisco Network Optimization Service; as it is a predetermined and contractual services fee, Forrester did not risk-adjust the cost estimates for uncertainty.

The following tables show the values used to adjust for uncertainty in benefit estimates. Different estimates have different levels of risk adjustment. For example, Forrester applied a higher risk weighting to productivity savings than to resource cost avoidance — in part due to the assumption that there is more variability in the productivity savings estimate. Readers are urged to apply their own risk ranges based on their own degree of confidence in the cost and benefit estimates.

Table 10: Risk Factors — Benefits

Benefits	Original Estimate	Low	High	Mean
Resource Cost Avoidance From Network Optimization	100%	90%	100%	97%
Resource Cost Avoidance From Troubleshooting	100%	90%	100%	97%
Productivity Savings From Increased Uptime	100%	60%	100%	87%
Avoided Cost Of Loss From Critical Application Failure	100%	70%	100%	90%

Source: Forrester Research, Inc.

These risk factors in Table 10 are applied to the previously listed benefits, resulting in the risk-adjusted benefit values in Table 11 below:

Table 11: Total Benefits — Risk-Adjusted

Benefits	Step 1:	High	Low	Step 2:	
	Original Estimate			Risk adjustment %	Value
Resource Cost Avoidance From Network Optimization	\$2,700,000	\$2,700,000	\$2,430,000	97%	\$2,619,000
Resource Cost Avoidance From Troubleshooting	\$600,000	\$600,000	\$540,000	97%	\$582,000
Productivity Savings From Increased Uptime	\$865,385	\$865,385	\$519,231	87%	\$752,885
Avoided Cost Of Loss From Critical Application Failure	\$180,000	\$180,000	\$126,000	90%	\$162,000

Source: Forrester Research, Inc.

Flexibility

Flexibility, as defined by Forrester's TEI methodology, represents an investment in additional capacity or agility today that can be turned into future business benefits at some additional cost. This provides an organization with the "right" or the ability to engage in future initiatives but not the obligation to do so.

Forrester identified the following areas that present flexibility options for Paragon through using Cisco Network Optimization Service:

- Because of improved scalability, new projects can be implemented in the future at minimal cost and impact to the network. There is also the future benefit of a faster turnaround time from project conception to implementation.
- New technology introduced through Cisco Network Optimization Service allows the network engineering and architecture team to implement new projects that will bring in additional revenue to the organization.

While the data for calculating the value of several flexibility options is insufficient at this time and cannot be included in the analysis, the value of flexibility is unique to each organization, and the willingness to measure its value varies from company to company; see Appendix B for additional information regarding the flexibility calculation.

TEI Framework: Summary

Considering the financial framework constructed above, the results of the costs, benefits, risk, and flexibility sections using the representative numbers can be used to determine a return on investment (ROI), net present value, and payback period. Table 12 shows the consolidation of the numbers for the composite organization.

Table 12: Total Costs And Benefits, Non-Risk-Adjusted

Ref.	Project cash flow	Calculation	Initial Cost	Year 1	Year 2	Year 3	Total	PV / NPV
E1	Total costs		(\$600,000)	\$0	(\$600,000)	(\$600,000)	(\$1,800,000)	(\$1,546,657)
F1	Total benefits		\$0	\$1,448,462	\$1,448,462	\$1,448,462	\$4,345,385	3,602,109
G1	Net savings		(\$600,000)	\$1,448,462	\$848,462	\$848,462	\$2,545,385	\$2,055,453
H1	ROI	(F1-E1)/E1						133%
P3	Payback Period							5 months

Source: Forrester Research, Inc.

Table 13 below shows the risk-adjusted values, applying the risk-adjustment method indicated in the “Risks” section.

Table 13: Total Costs And Benefits, Risk-Adjusted

Ref.	Project cash flow	Calculation	Initial Cost	Year 1	Year 2	Year 3	Total	PV / NPV
J1	Total costs		(\$600,000)	\$0	(\$600,000)	(\$600,000)	(\$1,800,000)	(\$1,546,657)
K1	Total benefits		\$0	\$1,371,962	\$1,371,962	\$1,371,962	4,115,885	3,411,865
L1	Net savings		(\$600,000)	\$1,371,962	\$771,962	\$771,962	\$2,315,885	\$1,865,209
M1	ROI	(K1-J1)/J1						121%
P3	Payback Period							5.2 months

Source: Forrester Research, Inc.

It is important to note that the values used throughout the TEI Framework are based on in-depth interviews with five organizations and the resulting composite organization built by Forrester. Forrester makes no assumptions as to the potential return that other organizations will receive within their own environment. Forrester strongly advises that readers use their own estimates within the framework provided in this study to determine the expected financial impact of implementing Cisco Network Optimization Service.

Study Conclusions

Forrester's in-depth interviews with Cisco Network Optimization Service customers showed the following:

- Based on information collected in interviews with current Cisco Network Optimization Service customers, Forrester found that organizations can realize benefits in the form of resource cost savings for network optimization, improved system availability, reduced downtime, and avoidance of loss from critical application failure.
- Cisco Network Optimization Service enables its customers to plan and design systems to ensure that their organizations can strategically approach scalability and growth. Taking a more systemic and proactive approach to aligning technology solutions to business requirements made these customers more flexible and gave them the ability to quickly adapt to changing market requirements.
- Of the customers interviewed, several factors contributed to the difference in ROIs. These factors included the cost of downtime to the organization and the criticality of the applications on the Cisco network. In general, the higher the cost of downtime and the more critical the applications, the greater the returns to the interviewed organization.

The financial analysis provided in this study illustrates the potential way an organization can evaluate the value proposition of Cisco Network Optimization Service. Based on information collected in five in-depth customer interviews, Forrester calculated a three-year risk-adjusted ROI of 121% for the composite organization with a payback period of less than six months. All final estimates are risk-adjusted to incorporate potential uncertainty in the calculation of costs and benefits.

Based on these findings, companies looking to implement Cisco Network Optimization Service can see labor cost savings and productivity benefits. Using the TEI framework, many companies may find the potential for a compelling business case to make such an investment.

Table 14: ROI: Original And Risk-Adjusted

Summary Financial Results	Original Estimate	Risk-Adjusted
Payback period	5 months	5.2 months
ROI	133%	121%
Total costs (PV)	(\$1,546,657)	(\$1,546,657)
Total benefits (PV)	\$3,602,109	\$3,411,865
Total (NPV)	\$2,055,453	\$1,865,209

Source: Forrester Research, Inc.

Appendix A: Composite Organization

Forrester's conclusions were derived in large part from information received in a series of in-depth interviews with executives and personnel at five organizations currently using Cisco Network Optimization Service. As each of the interviewed organizations were promised anonymity, Forrester constructed a composite company, a TEI framework, and an associated ROI analysis based on our findings from these Cisco customers.

This study illustrates the financial impact of using Cisco Network Optimization Service by aggregating the findings from the customer interviews and portraying a composite organization that is achieving value from Cisco Network Optimization Service.

Our composite company "Paragon" is a US-based services firm that provides a variety of trading, financial advisory, and consulting functions through its different business units. Forrester created this composite company to reflect an organization with the following characteristics:

- \$1 billion in revenue.
- 2,500 employees.
- Located in North America with branch offices in Europe, the Middle East, and Asia.
- 130 centrally located IT staff, with 30 allocated to network operations.

Here are the critical success factors, high-level business objectives, and strategies that Paragon is hoping to achieve by implementing Cisco Network Optimization Service:

- The organization is experiencing rapid growth and has increasing technology requirements to match this expansion.
- The IT organization requires access to network engineering resources and expertise that are too costly to maintain internally.
- As several critical applications are running on the network, extended network downtime has significant financial implications, particularly in the trading functions of the organization. The organization aims to minimize network downtime through this initiative.

Appendix B: Total Economic Impact™ Overview

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.

The TEI methodology consists of four components to evaluate investment value: benefits, costs, risks, and flexibility. For the purpose of this analysis, the impact of flexibility was not quantified.

Benefits

Benefits represent the value delivered to the user organization — IT and/or business units — by the proposed product or project. Often product or project justification exercises focus just on IT cost and cost reduction, leaving little room to analyze the effect of the technology on the entire organization. The TEI methodology and the resulting financial model place 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. Calculation of benefit estimates involves a clear dialogue with the user organization to understand the specific value that is created. In addition, Forrester also requires that there be a clear line of accountability established between the measurement and justification of benefit estimates after the project has been completed. This ensures that benefit estimates tie back directly to the bottom line.

Costs

Costs represent the investment necessary to capture the value, or benefits, of the proposed project. IT or the business units may incur costs in the forms of fully burdened labor, subcontractors, or materials. Costs consider all the investments and expenses necessary to deliver the proposed value. In addition, the cost category within TEI captures any incremental costs over the existing environment for ongoing costs associated with the solution. All costs must be tied to the benefits that are created.

Risk

Risk measures the uncertainty of benefit and cost estimates contained within the investment. Uncertainty is measured in two ways: the likelihood that the cost and benefit estimates will meet the original projections and the likelihood that the estimates will be measured and tracked over time. TEI applies a probability density function known as “triangular distribution” to the values entered. At a minimum, three values are calculated to estimate the underlying range around each cost and benefit.

Flexibility

Within the TEI methodology, direct benefits represent one part of the investment value. While direct benefits can typically be the primary way to justify a project, Forrester believes that organizations should be able to measure the strategic value of an investment. Flexibility represents the value that can be obtained for some future additional investment building on top of the initial investment already made. For instance, an investment in an enterprisewide upgrade of an office productivity suite can potentially increase standardization (to increase efficiency) and reduce licensing costs. However, an embedded collaboration feature may translate to greater worker productivity if activated. The collaboration can only be used with additional investment in training at some future point in time. However, having the ability to capture that benefit has a present value that can be estimated. The flexibility component of TEI captures that value.

Appendix C: Glossary

Discount rate: The interest rate used in cash-flow analysis to take into account the time value of money. Although the Federal Reserve Bank sets a discount rate, companies often set a discount rate based on their business and investment environment. Forrester assumes a yearly discount rate of 10% for this analysis. Organizations typically use discount rates between 8% and 16% based on their current environment. Readers are urged to consult their organization to determine the most appropriate discount rate to use in their own environment.

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.

Present value (PV): The present or current value of (discounted) cost and benefit estimates given an interest rate (the discount rate). The PV of costs and benefits feed into the total net present value of cash flows.

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.

Return on investment (ROI): A measure of a project's expected return in percentage terms. ROI is calculated by dividing net benefits (benefits minus costs) by costs.

A Note On Cash-Flow Tables

The following is a note on the cash-flow tables used in this study (see the Example Table below). The initial investment column contains costs incurred at "time 0" or at the beginning of Year 1. Those costs are not discounted. All other cash flows in Years 1 through 3 are discounted using the discount rate shown in Table 2 at the end of the year. Present value (PV) calculations are calculated for each total cost and benefit estimate. Net present value (NPV) calculations are not calculated until the summary tables and are the sum of the initial investment and the discounted cash flows in each year.

Example Table

Ref.	Category	Calculation	Initial cost	Year 1	Year 2	Year 3	Total

Source: Forrester Research, Inc.

Appendix D: About The Project Manager

Michelle Salazar **Consultant**

Michelle Salazar is a consultant with Forrester's Total Economic Impact (TEI) consulting practice. The TEI methodology focuses on measuring and communicating the value of IT and business decisions and solutions as well as providing an ROI business case based on the costs, benefits, risks, and flexibility of investments.

Prior to joining Forrester, Michelle held leadership roles in operations, technology, and marketing in such large organizations as Shell and Avaya. At Shell, she was a product manager for LPG retail distribution initiatives as well as project lead for quality and information security at Shell Philippines. While working at Avaya, she led the inventory reduction program and consulted on various aftermarket operations projects. Michelle also came to Forrester with process improvement and account management experience in high growth startups in media and digital services.

Michelle holds a bachelor's in industrial engineering from the University of the Philippines and an MBA from the MIT Sloan School of Management.

Appendix E: About Cisco Network Optimization Service

For more information about Cisco Network Optimization Services, please visit Cisco.com at the URL below:

http://www.cisco.com/en/US/products/svcs/ps2961/serv_category_home.html

For more information about Cisco's enterprise architecture and business transformation services, download the white paper "Enterprise Transformation & Network Architecture" at the URL below:

http://www.cisco.com/en/US/products/svcs/services_area_root.html