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The Total Economic Impact™ Of Cisco SP Network Optimisation Service And Focused Technical Support

Multicompany Value Analysis

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TABLE OF CONTENTS

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Executive Summary

In August 2009, Cisco Systems commissioned Forrester Consulting to examine the total economic impact and potential return on investment (ROI) that service providers may realize by purchasing Cisco Service Provider Network Optimisation Service (NOS) and Focused Technical Support (FTS).

Cisco SP Network Optimisation Service and Focused Technical Support are offered by Cisco to help service providers ensure that their networks remain optimized and robust with carrier-class availability as part of its operational assurance suite of services. With SP NOS and FTS, Cisco aims to help service providers successfully and effectively deploy new revenue-generating services across the network and work with organizations as a trusted advisor, not just a supplier. Through service features such as annual assessments, network health, network support, continuous learning, and service assurance, Cisco 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 multiyear-contract basis.

To understand the financial impact of using Cisco SP NOS and FTS, Forrester conducted interviews with five Cisco customers. These customers included large to midsize European carriers. Forrester then compiled the results from these interviews into a composite case study of a service provider for wireless, data, and broadband Internet services located in a country in Western Europe.

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

- Improved network stability and reduction of downtime, leading to avoidance of revenue loss and reduced cost of troubleshooting and service restoration.
- Reduction of risk for the organization of service-level agreement (SLA) penalties due to standardization of the network and improved network monitoring.
- Improved operational efficiency, including faster incident and problem resolution.
- Productivity savings and reduced labor costs.
- Access to in-depth knowledge.
- Faster time-to-market.
- Improved regulatory compliance.
- Personalized service and flexibility.

Purpose

The purpose of this study is to provide readers with a framework to evaluate the potential financial impact of Cisco SP NOS and FTS 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 Cisco SP NOS and FTS.

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 Cisco SP NOS and FTS:

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 SP NOS and FTS 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 SP NOS and FTS.
3. Forrester conducted a series of in-depth interviews with five organizations currently using Cisco SP NOS and FTS 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 SP NOS and FTS by aggregating the findings from the customer interviews and portraying a composite organization to illustrate the quantifiable costs and benefits of deploying Cisco SP NOS and FTS.

   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 10 months after deployment, with the ROI for the composite company at 197%.

- **Benefits.** The benefits that the composite company received, which reflect the experiences of the organizations interviewed for this study, aggregate to a present value (PV) of approximately $3,572,357 (net present value [NPV]) over a three-year contract. Please see the Benefits section for a complete description of these financial benefits.

- **Costs.** The cost to implement Cisco SP NOS and FTS consists of the services contract fee, which is $1,203,636 (NPV) 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	Calculation	Initial cost	Year 1	Year 2	Year 3	Total	PV/NPV
J1	Total costs		($440,000)	($440,000)	($440,000)	$0	($1,320,000)	($1,203,636)
K1	Total benefits		$0	$1,002,540	$1,686,540	$1,686,540	$4,375,620	$3,572,357
L1	Net savings			$562,540	$1,246,540	$1,686,540	$3,055,620	$2,368,721
M1	Return on investment	(K1-J1)/J1						197%
P3	Payback period							9.4 months

Source: Forrester Research, Inc.

The time period for this Forrester analysis is three years. Organizations that have shorter contracts (such as one-year contracts) with Cisco NOS and FTS may see shorter payback periods for their investments. If the composite organization had only engaged in a one-year contract with Cisco, the composite organization would have seen a payback period of 5.4 months instead.

Note that calculation totals throughout the study may not align because of rounding. In certain cases, figures were calculated as a function of the exchange rate of US$1.6 to £1.

For a conservative estimate, figures from the flexibility analysis are not included in the final, risk-adjusted ROI.

Forrester found that higher ROIs were associated with service providers whose networks, prior to the Cisco SP NOS and FTS implementation, were more unstable and with higher downtime and more critical customer outages.

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 SP NOS and FTS. 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 SP NOS and FTS.
- This study is not meant to be used as a competitive product analysis.

Cisco SP NOS And FTS: Overview

According to Cisco, its operational support portfolio for the service provider is comprised of a suite of tiered offerings delivering reactive to proactive and predictive capability to address service provider IP Next Generation Network (IP NGN) assurance requirements.

Cisco FTS delivers the premium operational and technical support needed to keep the mission-critical networks running. The services provide the service provider with "high-touch" reactive support with access to industry-leading Cisco network and operations specialists. These Cisco experts manage, analyze, and expedite the resolution of any network issues that arise, shortening time-to-resolution and continuously improving the operational efficiency. With access to designated Cisco resources and expertise, you can better meet your business objectives and improve your overall profitability.

Cisco SP NOS and Assurance Services are proactive offerings to help customers optimize their IP NGN to meet the changing demands while improving network availability and performance and preventing outages from occurring. NOS complements the real-time network assurance services of fault management, performance management, capacity management, and availability management, which are underpinned by SLAs.

Cisco SP NOS is comprised of the following key modules:

- **Annual assessments.** Assessment services identify and resolve gaps between the current state of network and processes compared with leading Cisco best practices.
- **Network health.** Proactive network health checks and preventative maintenance service maximize network availability through Cisco's unique tools, process, people, and intellectual capital.
- **Network support.** Network Change Support Services increase network stability while ensuring low-risk implementation of new revenue-generating services.
- **Continuous learning.** Continuous Learning Services increase the technical competence of the service provider.

According to Cisco, SP NOS and FTS together provide a tightly integrated operational support offering to help the service provider with network assurance while reducing cost and improving operational efficiencies and time-to-market for new services.

Analysis

As stated in the Executive Summary, Forrester took a multistep approach to evaluate the impact that implementing Cisco SP NOS and FTS can have on an organization. This included:

- Interviews with Cisco marketing, engineering, and sales personnel.
- In-depth interviews with five organizations in Europe currently using Cisco SP NOS and FTS.
- Construction of a common financial framework for the implementation of Cisco SP NOS and FTS.
- 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 Europe. The following is a brief description of each of the interviewed organizations, all of whom were promised anonymity:

1. A European state carrier with more than 15,000 employees and more than $12 billion in annual revenue. The company provides services to residential customers and small and medium enterprises and corporations, all concentrated locally. Services include networks for wireless, wireline, narrowband, and voice.
2. A large network provider offering various communication and network services to businesses in major European markets. This includes transmission services as well as public and private IP services.
3. The network services unit of a UK-based telecommunications services company that provides mobile voice communications, messaging, data, fixed-line, and other carrier services as well as business network solutions to its customers worldwide.
4. A global telecommunications company that manages the network of one of the largest operators of mobile broadband networks in the UK.
5. A major incumbent telecommunications company in Europe that provides landline phone service, GSM mobile phone service, and other Internet and telephony services to customers in its home country and other worldwide subsidiaries.

The in-depth interviews with these large carriers uncovered several key insights:

- Service providers had varying goals for engaging with Cisco NOS and FTS. These ranged from improving operational efficiency, to gaining in-depth technical support for issues not immediately addressed by standard support services, to augmenting in-house skills with more advanced skills from Cisco, to improving overall network quality. There were instances where some service providers interviewed faced serious critical customer outages and needed Cisco's help to manage the network and lower their soaring operational costs.

- Organizations generally saw a decrease in network downtime with the use of Cisco SP NOS and FTS. The degree of this decrease was a function of the maturity of network management in place before the service provider engaged with Cisco SP NOS and FTS. As one large incumbent carrier noted, "One benefit has been an increase in uptime and improvement in network stability. Working as one group, we are able to find problems before they manifest."

- The service providers interviewed continuously mentioned how valuable the partnership was that they established with Cisco through SP NOS and FTS. Cisco expertise complemented the work of the service providers' operations teams. One tier one service provider noted, "Cisco SP NOS and FTS gives us possibilities [that] we otherwise would not have had."

- Working with the same set of Cisco engineers, in some cases, for well over three years, gave these tier one and tier two service providers a way to establish a "common understanding with Cisco on the network environment." This made communication with Cisco easier and helped with troubleshooting and problem resolution and in establishing a successful partnership.

- Interviewed service providers with more mature networks and processes noted that one of the major benefits to them of NOS and FTS was faster time-to-market. Designing new hardware and rolling out new services and features with access to Cisco internal expertise made the project development and implementation phases shorter.

- Organizations, from large incumbents with stable networks to midsize carriers, also reported better operational efficiency after engaging with Cisco. There was faster analysis of root cause and restoration of service. One large telecommunications service provider estimated that it saved 15% of incident resolution time due to NOS and FTS. Moreover, Cisco is able to help provide automation of its manual processes to achieve continuous operational efficiency. One customer remarked that the labor savings they achieved through Cisco SP NOS and FTS was "not just about improving speed, but more about Cisco being able to do things simpler."

- Working with Cisco also enabled some of the interviewed organizations to begin establishing key performance indicators (KPIs) to measure network performance and create SLAs with their customers. Cisco service providers that are customers of SP NOS and FTS also have the option to work with Cisco to create joint SLAs where Cisco will share the financial risk and penalty of an SLA violation.

- Some of the service providers worked extensively with Cisco through SP NOS and FTS to manage the install base of their network by reviewing end-of-life support status for the network elements and updating hardware and software as needed. One customer observed that this results in a "network that remains supportable. Ongoing costs tend to be lower because we are maintaining assets better. We aren't ripping out parts of the network because it becomes unusable." Another customer, a major carrier, noted that Cisco was helpful with "keeping [its] network up-to-date and evaluating what direction to take for hardware and software upgrades."

- After resolving issues around network stability and standardization, organizations expanded their use of Cisco SP NOS and FTS in areas such as design reviews and implementing new services.

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 SP NOS and FTS. 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 SP NOS and FTS.

Composite Organization

Based on interviews with five existing customers provided by Cisco, Forrester constructed a composite organization, referred to in this document as "Amberline." The composite organization is a privately held communications company based in Europe that provides wireless, data, and broadband Internet services. The composite company is based in Western Europe, with customer support divisions in Eastern Europe and Asia. It has 2,000 employees, $2.5 billion in annual revenue, and more than 4.5 million subscribers.

Current Network Environment

- The company has one NOC in Western Europe and two NOCs outside the home country with outsourced resources for customer support.

Reasons For Investment In Cisco SP NOS And FTS

- The company launched and was rapidly expanding and gaining market share in its country of operations. As demand on its network increased, the organization needed to reduce critical customer-facing outages and establish SLAs.

- The company's five-year-old network had grown very quickly in a minimally managed fashion. As a result, costs to the level of service required by its customers were increasing considerably each year. The organization wanted to manage its network to meet this growth and reduce capital and operational costs as well as put processes in place to automate many of the network operations.

- As the company was in its early high-growth period and aggressively expanding its customer base, the organization needed quick access to expertise to manage and grow the network.

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	3 years

Source: Forrester Research, Inc.

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

Costs

As the product under evaluation is a services contract, the only cost component included in the analysis is the Cisco SP NOS and FTS contract fee.

Cisco SP NOS And FTS Contract Fee

A number of the organizations interviewed had their Cisco SP NOS and FTS contracts rolled into their overall Cisco support contract. One organization noted that the flexibility provided by its contract with Cisco allowed it to employ the full range of services in the first two years then reduce the services and corresponding fees in the third year as its network stabilized.

The cost of Cisco SP NOS and FTS for the composite organization is $440,000 annually over a three-year contract. This translates to a fee of $1,320,000 for three years.

Table 3: Cisco SP NOS And FTS Fees

Ref.	Metric	Calculation	Initial	For Year 2	For Year 3	Total
A1	Cisco SP NOS and FTS contract		$440,000	$440,000	$440,000	
At	Cisco professional fees	A1	$440,000	$440,000	$440,000	
Ato	Total (original)		($440,000)	($440,000)	($440,000)	($1,320,000)

Source: Forrester Research, Inc.

Benefits

> *"We've found an interesting thing for SP Network Optimisation Services and Focused Technical Support — we can ask Cisco the question we cannot ask ourselves. They are complementary to us. We work as one working group."* — Senior engineer, Cisco customer, major telecommunications carrier

As the composite organization launched its services and grew rapidly to gain market share in the wireless, data, and broadband markets, Amberline was faced with network performance issues and critical customer-facing outages. Recognizing that it needed to actively manage its Cisco network to reduce downtime and reduce its growing operational expenses, Amberline implemented Cisco SP NOS and FTS.

Benefits to the composite organization include: 1) improved network stability and reduction of downtime, leading to avoidance of revenue loss; 2) standardization of the network and improved network monitoring, which reduces risk for the organization of SLA penalties; and 3) improved operational efficiency, including faster incident and problem resolution, leading to reduction of labor costs.

Cost Avoidance Of Lost Revenue Through Reduction Of Downtime

> *"In the past [with an unstable network], we were only able to keep the quality of the network high enough because of the total availability of the Cisco engineers. Without that, I'm afraid we would have lost our availability in a very dramatic way."* — Senior engineer, Cisco customer

Consulting provided by Cisco through annual assessments, network health, network support, continuous learning, and service assurance enabled the organizations interviewed to improve the performance of their networks through practices ranging from standardization of processes for operational efficiency to designing the network to optimize Cisco support.

Some interviewed organizations that had used Cisco support at critical junctures in their network stability noted that the Road to Five Nines Program through Cisco SP NOS and FTS was very useful in assessing the state of the network, the processes, and capabilities of the organization and in providing the company with a blueprint to get to a "six 9s" available network.

One organization reported that after going through this process, it was able to reduce its downtime by 75% over the course of three years and also reduce the number of critical outages that affected its customers by 60%. Another organization noted that resolution time for network incidents was reduced by 15%.

Organizations that had more stable initial networks when they engaged with Cisco still noted an increase in uptime and improvement in network stability through Cisco SP NOS and FTS.

Amberline, the composite organization, was losing an average of $300,000 a year due to the unavailability of the customer billing systems caused by network downtime. With Cisco NOS and FTS, the composite organization reduced network downtime, and these financial losses dropped by 65%. This corresponds to revenue savings for the organization of $195,000 annually or $585,000 in total over a period of three years.

Table 4: Cost Avoidance Of Lost Revenue Through Downtime Reduction

Ref.	Metric	Calculation	Per period	Year 2	Year 3	Total
A1	Losses per year due to unavailability of billing systems		$300,000			
A2	Percentage reduction		65%			
At	Cost avoidance — lost revenue due to unavailability of billing systems	A1 * A2	$195,000			
Ato	Total (original)		$195,000	$195,000	$195,000	$585,000

Source: Forrester Research, Inc.

Cost Avoidance — SLA Penalty Risk Reduction

Organizations also used Cisco SP NOS and FTS to help standardize configurations across the network elements and remove all end-of-life equipment from the network. This involved working with Cisco in the assessment and evaluation of the network as well as planning the purchasing of hardware and software updates for those network elements that were at their end of life for vendor support. With SP NOS and FTS, the service providers interviewed also improved their network monitoring capability. This standardization and better network monitoring improved the stability of the service providers' networks and reduced risk for the companies.

As one service provider stated, "We have very tight SLAs with [Customer Name], and with Cisco NOS and FTS, we've reduced our exposure." Cisco also provides its customers the option to work with Cisco to create joint SLAs where Cisco will share the financial risk and penalty of an SLA violation.

With the SLAs contracted by Amberline, the composite organization is obligated to pay penalties of, on average, $832,000 annually in service credits to its customers should it not meet these SLAs. It is estimated that by employing Cisco NOS and FTS, the service provider has reduced its exposure by 80% and saved more than $1.9 million in service credits over three years.

Table 5: Cost Avoidance — SLA Penalty Risk Reduction

Ref.	Metric	Calculation	Per period	Year 2	Year 3	Total
A1	Service credits for not meeting SLAs		$832,000			
A2	Reduction of exposure		80%			
At	Cost avoidance — SLA with customers	A1 * A2	$665,600			
Ato	Total (original)		$665,600	$665,600	$665,600	$1,996,800

Source: Forrester Research, Inc.

Labor Savings Through Improved Operational Efficiency

The organizations interviewed noted that using Cisco SP NOS and FTS resulted in faster problem resolution and troubleshooting for their network engineers. Cisco also helped shorten the time needed for configuration and implementation of new projects. This improved operational efficiency resulted in productivity savings for the organization and, in some cases, a restructuring of network support staffing that resulted in significant labor savings.

Some service providers estimated that they were able to achieve 15% to 20% productivity improvement for each person on their network team through Cisco SP NOS and FTS. Other organizations valued the labor savings as a function of engineering headcount that they did not have to hire as the demands on their network increased. With reduced FTE requirements, one organization noted that this also reduced training costs. "We'd need to give our engineers six to twelve months of training; that's an expensive resource," one interviewed customer said.

Launching new services was another area wherein service providers saw operational efficiency and subsequent labor savings. One organization estimated that launching a new service without Cisco's feedback in the testing process would have increased its average new release project time of nine months by at least 30%. Another organization estimated a 50% increase in speed of deployment. Services that these organizations discussed include broader support for IP version 6, streamlining of the network to better support VoIP, and establishment of new networks.

Labor savings for the composite organization in this study is quantified as a function of cost reduction of engineering headcount. With improved operational efficiency at Amberline through Cisco SP NOS and FTS, the requirements for operational support also decreased. The organization could now transition previous higher levels of support to lower-level support. Amberline implemented these organizational changes after nine months of using Cisco SP NOS and FTS. The benefits in Year 1 are calculated to reflect this phased approach.

The organization reduced the number of network engineers in its headquarters. A portion of its engineers, the level-one support staff, was reduced from 15 to eight. It was also able to outsource a bulk of its operations to an office in Eastern Europe. This office handles second-line and third-line support for Amberline. With outsourcing, Amberline reduced FTE costs and training costs for its organization.

Annual cost for second-line support went down from $640,000 in headquarters to an outsourced cost of $160,000 a year. Annual cost for third-line support went from $960,000 in headquarters to $480,000 in outsourced fees annually. These represent savings of $2.16 million over three years for the organization.

Table 6: Labor Savings Through Improved Operational Efficiency

Ref.	Metric	Calculation	Year 1	Year 2	Year 3	Total
A1	Cost for internal second-line support		$160,000	$640,000	$640,000	
A2	Cost for outsourced second-line support		$40,000	$160,000	$160,000	
A3	Cost for internal third-line support		$240,000	$960,000	$960,000	
A4	Cost for outsourced third-line support		$120,000	$480,000	$480,000	
At	Labor savings	(A1 - A2) + (A3 - A4)	$240,000	$960,000	$960,000	
Ato	Total (original)		$240,000	$960,000	$960,000	$2,160,000

Source: Forrester Research, Inc.

Total Benefits

The sum of the quantified benefits that the composite company will receive over a three-year analysis is $4,741,800.

Table 7: Total Benefits Of Cisco SP NOS And FTS

Benefits	Initial	Year 1	Year 2	Year 3	Total
Cost avoidance of lost revenue through reduced downtime		$195,000	$195,000	$195,000	$585,000
Cost avoidance — SLA penalty risk reduction		$665,600	$665,600	$665,600	$1,996,800
Labor savings through improved operational efficiency		$240,000	$960,000	$960,000	$2,160,000
Total		$1,100,600	$1,820,600	$1,820,600	$4,741,800

Source: Forrester Research, Inc.

Additional Benefits (Not Quantified)

The Cisco customers interviewed also identified the following unquantified benefits of using Cisco SP NOS and FTS:

Access To In-Depth Knowledge

One benefit consistently cited by the interviewed organizations was the access to in-depth knowledge and subsequent knowledge transfer that Cisco SP NOS and FTS provide. Service providers found it helpful that they could go directly to the Cisco engineering teams that had thorough understanding of Cisco hardware and software for specific bugs and design issues. One customer noted that they were "better able to design the network, software loads, and hardware setups and fit requirements ahead of time" when Cisco had new releases. Another customer noted that they obtained "more information than what is publicly available" on new hardware. Knowledge transfer was an advantage and allowed service providers to quickly ramp on emerging technologies without requiring in-house staff to become proficient, get training, and acquire new skills.

Faster Time-To-Market

> *"The things that we plan to do are easier, faster, and more efficiently done with Cisco SP Network Optimisation and Focused Technical Support Service than without."* — Group manager for IP planning and engineering, Cisco customer

Another benefit cited by the service providers interviewed was that Cisco SP NOS and FTS enabled faster time-to-market for the organizations when rolling out new services to their customers. Customers noted that designing the network with the internal knowledge that Cisco provided on hardware, appropriate configurations, and network performance comparison made the design and implementation process faster. These projects ranged from large-scale deployments that could take more than a year to smaller projects that took only four months. Feedback ranged from a 30% to 50% improvement in overall project time, depending on the nature of the new service being deployed. Organizations would involve Cisco engineers throughout the life cycle of the project, from network assessment, knowledge transfer, and pre-evaluation stages to design, rollout, and testing.

Improved Regulatory Compliance

By improving network performance and operational efficiency, service providers noted that their IT engineers could now spend more of their time on strategic projects as opposed to operational issues. One service provider noted that with this improvement, its engineers were able to spend their time implementing ITIL for network operations.[1] This, coupled with network stability, has allowed the organization to demonstrate PCI compliance to payment standards that would allow the service provider to bill its clients more efficiently.

Flexibility And Personalized Service

Organizations interviewed also noted that one of the main benefits of working with Cisco SP NOS and FTS was the personalized service that they received from Cisco. These customers noted that the flexibility that Cisco brought, in terms of the contract and the ability to adjust the services according to each organization's changing requirements over time, was very important. "That kind of partnership is very valuable," said the manager of network services of one Cisco customer. These tier one and tier two service providers also talked about the advantage in design and problem resolution of working with the same set of Cisco engineers through the years who knew their particular networks very well. "As they get to know your network, it makes problem resolution easier," one customer noted.

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 cost avoidance of lost revenue due to reduction of downtime. The $585,000 value used in this analysis can be considered the "most likely" or expected value. These cost avoidance savings vary based on the downtime reduction and 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 70% 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 90% as the mean (90% is equal to the mean of 70%, 100%, and 100%). Forrester applies this mean to the most likely estimate, $585,000, to arrive at a risk-adjusted value of $562,500.

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

- The variability in the savings from downtime reduction and the criticality of the applications on the network for a particular organization.
- The uncertainty and variability in the magnitude of risk reduction for SLA penalties for different organizations.

- The variability in labor savings that can be captured from operational efficiency.
- The cost of Cisco SP NOS and FTS; 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 larger risk adjustment to cost avoidance of lost revenue through reduced downtime than to labor savings — in part due to the assumption that there is more variability in the cost avoidance of lost revenue estimate. Readers are urged to apply their own risk ranges based on their own degree of confidence in the cost and benefit estimates.

Table 8: Risk Factors — Benefits

Benefits	Original estimate	Low	High	Mean
Cost avoidance of lost revenue through reduced downtime	100%	70%	100%	90%
Cost avoidance — SLA penalty risk reduction	100%	70%	100%	90%
Labor savings through improved operational efficiency	100%	85%	100%	95%

Source: Forrester Research, Inc.

These risk factors in Table 8 are applied to the previously listed benefits, resulting in the risk-adjusted benefit values in Table 9 below:

Table 9: Total Benefits — Risk-Adjusted

Benefits	Step 1: Original estimate	Step 1: High	Step 1: Low	Step 2: Risk adjustment %	Step 2: Risk adjustment Value
Cost avoidance of lost revenue through reduced downtime	$585,000	$585,000	$409,500	90%	$526,500
Cost avoidance — SLA penalty risk reduction	$1,996,800	$1,996,800	$1,397,760	90%	$1,797,120
Labor savings through improved operational efficiency	$2,160,000	$2,160,000	$1,836,000	95%	$2,052,000

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 Amberline by using Cisco SP NOS and FTS:

- As Amberline launched and grew rapidly to gain market share, the composite organization was faced with network performance issues and critical customer-facing outages. Prior to engaging with Cisco SP NOS and FTS, the composite organization built an alternative network to address these network issues and meet the traffic generated by the rollout of new services. Recognizing that it needed to actively manage its Cisco network to reduce downtime and reduce its growing operational expenses, Amberline implemented SP NOS and FTS.

  With the improvement in network stability through Cisco SP NOS and FTS, Amberline moved all traffic back to the Cisco network. This also gave it the opportunity to decommission the alternative network it had initially built.

- The cost of support for this alternative network is $800,000 annually. In the flexibility analysis, the total benefit or asset value from decommissioning this alternative network is estimated as the total cost avoidance of these support costs. To achieve this benefit, the internal effort to decommission the alternative network would cost the organization an estimated $240,000 for planning, design, and execution of the project.

- The flexibility component of TEI captures that value using either the financial industry standard Black-Scholes or the binomial option pricing models. With a two-year time frame to use this option, Forrester values the above flexibility option at $584,125. This value exists in addition to risk-adjusted benefits and ROI described in this analysis.

Table 10: Flexibility Analysis — Elimination Of Redundant Network

Ref.	Metric	Calculation	Per period
A1	Asset value (benefit — annual cost of network support)		$800,000
A2	Cost to acquire (labor for planning and implementation)		$240,000
A3	Expiration (time to expire, in years)		2
At	Flexibility — decommissioning redundant network	Black-Scholes Model	$ 584,125

Source: Forrester Research, Inc.

The value of flexibility is unique to each organization, and the willingness to measure its value varies from company to company (see Appendix A for additional information regarding the flexibility

calculation). Please note that the values calculated above exist in addition to risk-adjusted benefits described in this case study analysis; Forrester has not included the option value in the ROI calculations.

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 an ROI, NPV, and payback period. Table 11 shows the consolidation of the numbers for the composite organization.

Table 11: 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		($440,000)	($440,000)	($440,000)	$0	($1,320,000)	($1,203,636)
F1	Total benefits		$0	$1,100,600	$1,820,600	$1,820,600	$4,741,800	$3,873,017
G1	Net savings			$660,600	$1,380,600	$1,820,600	$3,421,800	$2,669,381
H1	ROI	(F1-E1)/E1						222%
P3	Payback period							8 months

Source: Forrester Research, Inc.

Table 12 below shows the risk-adjusted values, applying the risk-adjustment method indicated in the Risks section.

Table 12: 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		($440,000)	($440,000)	($440,000)	$0	($1,320,000)	($1,203,636)
K1	Total benefits		$0	$1,002,540	$1,686,540	$1,686,540	$4,375,620	$3,572,357
L1	Net savings			$562,540	$1,246,540	$1,686,540	$3,055,620	$2,368,721
M1	ROI	(K1-J1)/J1						197%
P3	Payback period							9.4 months

Source: Forrester Research, Inc.

For a conservative estimate, figures from the flexibility analysis are not included in the final non-risk-adjusted and risk-adjusted ROI.

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 SP NOS and FTS.

Study Conclusions

Forrester's in-depth interviews with Cisco SP NOS and FTS customers showed the following:

- Based on information collected in interviews with current Cisco SP NOS and FTS customers, Forrester found that organizations can realize benefits in the form of: 1) improved network stability and reduction of downtime, leading to avoidance of revenue loss; 2) standardization of the network and improved network monitoring, which reduces risk for the organization for SLA penalties; and 3) improved operational efficiency, including faster incident and problem resolution, leading to reduction of labor costs.

- Other benefits that the interviewed organizations mentioned include easy access to in-depth Cisco expertise that would otherwise be unavailable, faster time-to-market for the rollout of new services, redirection of IT engineer effort to more strategic work, improved regulatory compliance, and the high level of flexibility and personalized service provided through Cisco SP NOS and FTS.

The financial analysis provided in this study illustrates the potential way an organization can evaluate the value proposition of Cisco SP NOS and FTS. Based on information collected in five in-depth customer interviews, Forrester calculated a three-year, risk-adjusted ROI of 197% for the composite organization with a payback period of 9.4 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 SP NOS and FTS can see cost avoidance for lost revenue and SLA penalties and labor cost savings. Using the TEI framework, many companies may find the potential for a compelling business case to make such an investment.

Table 13: ROI, Original And Risk-Adjusted

Summary financial results	Original estimate	Risk-adjusted
ROI	222%	197%
Payback period (months)	8	9.4
Total costs (PV)	($1,203,636)	($1,203,636)
Total benefits (PV)	$3,873,017	$3,572,357
Total (NPV)	$2,669,381	$2,368,721

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 SP NOS and FTS. As each of the interviewed organizations was 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 SP NOS and FTS by aggregating the findings from the customer interviews and portraying a composite organization that is achieving value from Cisco SP NOS and FTS.

Our composite company "Amberline" is a privately held communications company based in Europe that provides wireless, data, and broadband Internet services. Forrester created this composite company to reflect an organization with the following characteristics:

- $2.5 billion in revenue and more than 4.5 million subscribers.
- 2,000 employees.
- Located in Western Europe, with customer support divisions in Eastern Europe and Asia.
- One NOC in Western Europe and two NOCs outside the home country with outsourced resources for customer support.

Here are the critical success factors, high-level business objectives, and strategies that Amberline is hoping to achieve by implementing Cisco SP NOS and FTS:

- The company launched and was rapidly expanding and gaining market share in its country of operations. As demand on its network increased, the organization needed to reduce critical customer-facing outages and establish SLAs.
- The company's five-year-old network had grown very quickly in a minimally managed fashion. As a result, costs to the level of service required by its customers were increasing considerably each year. The organization wanted to manage its network to meet this growth and reduce capital and operational costs.
- As the company was in its early high-growth period and aggressively expanding its customer base, the organization needed quick access to expertise to manage and grow the network.

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 Bishop
Consultant

Michelle S. Bishop 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 after-market 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 degree in industrial engineering from the University of the Philippines and an MBA from the MIT Sloan School of Management.

Appendix E: Endnotes

[1] ITIL v3 is a set of policies and concepts for managing IT infrastructure, development, and operations.